FINAL ENVIRONMENTAL IMPACT REPORT

Napa Plant Site Restoration Project

SCH # 2005092088

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November 2006

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Table of Contents

Table of Contents

Tables

Figures

Chapter I
Introduction

On February 6, 2006, the California Department of Fish and Game (DFG) circulated a Draft Environmental Impact Report (EIR) evaluating the potential impacts of the Napa Plant Site Restoration (NPSR) project. Under the proposed project, DFG would restore 1,460 acres of salt evaporations ponds and associated lands at the Napa Plant project site located in Napa County, California. DFG acquired the Napa Plant Site from Cargill Salt Co. (Cargill) in March 2003, as part of the larger State of California, federal and privately sponsored purchase of 16,500 acres of salt ponds in the San Francisco Bay estuary. As part of the purchase agreement, Cargill has the responsibility to reduce surface salt concentration to facilitate restoration. It is expected that this process would take up to 8 years, although some ponds may be available for restoration by 2007. During the public review period for the Draft EIR, which closed on March 23, 2006, DFG received comments from various government agencies, organizations, and individuals. Comments on the proposed project also were received at a public meeting held in the city of American Canyon on February 22, 2006. Section 2 of this document contains the comments received on the Draft EIR and responses to those comments. Many similar comments were received from separate entities. These comments focused on the following issues; bird strike hazards; land use conflicts/planning requirements; public access/trails; airport security relative to public access; flooding impacts to the airport; and funding mechanisms for active management and mitigation. Master responses have been prepared that address these issues. These responses are followed by individual comments and responses. Section 3 provides errata to the Draft EIR and information requested in the comments on the Draft EIR. Section 4 provides the Mitigation Monitoring and Reporting Plan for the Program. Section 5 provides a list of references used in this Final EIR.

In accordance with Section 15132 of the California Environmental Quality Act (CEQA) Guidelines, this document, together with the Draft EIR, constitutes the Final EIR for the NPSR Project. Th eFinal EIR includes additional information that was not included in the Draft EIR but that information clarifies, amplifies, or makes insignificant modifications to the information contained in the Draft EIR.

Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. At these meeting the issues regarding applicable plans and policies were discussed. DFG elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and to public safety in the form of bird strike hazard potential.

This alternative would restore all salt ponds in the project area to tidal wetland. Tidal action would be restored to approximately 1,288 acres of salt pond by constructing 4 breaches to create a habitat continuum including: subtidal channels, intertidal marsh, ecotone, and grassland to benefit estuarine biota such as birds, fishes and small mammals. It would re-establish wildlife corridors and connectivity of habitats at the landscape scale. The alternative includes establishment of public access, providing a variety of recreational and educational opportunities.

Chapter II
Responses to Comments on the Draft EIR

2.1. Master Comments and Responses

1. Bird Strike Hazards

Issues from letters:

Multiple issues were presented in comment letters regarding the relationship between bird use of the Napa Plant Site ponds and bird strike hazards to aircraft using the Napa County Airport. DFG recognizes and appreciates the serious nature of these concerns for public safety. Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. The primary issues expressed in the comment letters were:

a. The project should be in compliance with FAA safety guidelines as discussed in FAA Advisory Circular 150/5200-33A Sections 1 and 2-4 on wetlands and wildlife attractants
b. There should be a more complete evaluation of bird strike hazard potential for the No Project Alternative
c. The preferred alternative includes a managed pond with the potential to permanently increase bird strike hazard within 10,000 feet of an airport used by turbine-powered aircraft

Response:

Issue 1.a. Compliance with FAA safety guidelines as discussed in FAA Advisory Circular 150/5200-33A Sections 1 and 2-4 on wetlands and wildlife attractants

Introduction: FAA Advisory Circular 150/5200-33A provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public use airports. Airports that have received Federal grant-in-aid assistance must use these standards. The FAA also recommends the guidance in the Advisory Circular for land-use planners, operators of non-certified airports, and developers of projects, facilities, and activities on or near airports.1 Comments express concern that "the proposed project continues not to comply with FAA safety standards regarding hazardous wildlife attractants". This response discusses two facets of the issue arising from FAA circular 150/5200-33A: land use and minimizing hazardous wildlife attraction to proposed project habitats. Comments suggested that DFG should utilize Section 1 Hazardous Wildlife Attractants on or Near Airports and Section 2-4 Wetlands to evaluate and guide the project.

Section 1: DFG has reviewed the Advisory Circular and incorporated the guidance into the planning, design and management of the project. For example, DFG elected to change the preferred project to Alternative 1, Full Tidal Restoration. By selecting Alternative 1, and eliminating the managed pond, DFG has minimized the potential for creating a permanent waterfowl attractant near the airport. DFG has incorporated measures into the design of the project that will reduce the potential for attracting birds with high Relative Hazard Scores (See

[1] The bird strike hazard issue is inextricably linked to the land use issues discussed in Master Response 2. Readers are referred to Master Response 2 for additional discussion of this topic.

page 2-10 for further discussion of RHS). Specifically, the bottom of Pond 10 will be raised to an elevation that will expedite colonization of tidal marsh vegetation, and tidal channels will be constructed to enhance drainage and minimize the duration of standing water in the ponds. These conditions will favor small birds with low RHS, rather than larger waterfowl with high RHS. Furthermore, DFG has committed to monitoring bird use in Ponds 9 and 10 on a quarterly basis for 10 years Mitigation Measure PHS-1c. DFG will utilize control techniques presented in the FAA *Wildlife Hazard Management at Airports* (Cleary and Dolbeer 2005) to address wildlife hazards on the site, if any exists.

Section 2-4a: FAA Circular 150/5200-33A Section 2-4a pertains to existing wetlands on or near airport property. The guidance document advises airports to be alert to habitat changes that could affect aircraft safety. The proposed project will lead to habitat changes at an existing wetland, not create a new wetland/wildlife attractant. Open water (i.e., unvegetated) ponds adjacent to the Napa County Airport have been part of the salt harvesting operation conducted since the 1950s at the Napa Plant Site.

FAA circular 150/5200-33A Section 2-4a advises airports to "develop measures to minimize hazardous wildlife attraction in consultation with a wildlife damage management biologist." The USDA staff includes wildlife biologists specializing in wildlife hazard management. The USDA wildlife hazard management biologist (Milsaps, 8/2/06) suggested two actions to DFG, as follows:

- "CDFG may want to consider a pond that is 90-100% vegetated"

  The habitat conversion from open salt ponds to tidal marsh will result in 90-100% vegetation cover on the marsh plain over time (excluding the tidal channels). Our revegetation expectations are based on model predictions and our best professional judgment from years of experience in wetland restoration. DEIR Section 2.2.2.1 Tidal Habitat Evolution (pg. 2-7) and DEIR Figures 2-6a, b, and c depict the trajectory and predicted timeline for vegetation colonization for each marsh unit. Mitigation measures PHS-1a and PHS-1b were developed and included in the DEIR to raise the marsh plain and enhance drainage to accelerate the revegetation process. The constructed elevations in Pond 10 and the Central Unit ponds should result in rapid natural establishment of wetland plants. Past experience has shown that natural recruitment is the most effective method for establishing tidal marsh because seeds and rhizomes are readily available in incoming tidal waters. There are hundreds of acres of adjacent tidal marshes (e.g., Fagan Marsh and Coon Island) that produce abundant seed. Seed produced in adjacent marshes will be transported by the tides to the restored marsh areas. In addition, dredged material typically contains significant amounts of seed. It is anticipated that dredged material placed in Pond 10 will contain a significant seed bank from wetland species adapted to the Napa River ecosystem.

  In summary, DFG's design incorporates state of the art techniques for wetland restoration; e.g. natural recruitment is the preferred method for revegetation. Planting is considered ineffective because the final soil texture and elevation need to be established via tidal action. Vegetation monitoring has been added in association with mitigation measure PHS-1b. The monitoring will assess the amount of marsh plain area covered by plants. It will allow DFG

to track revegetation progress, compare actual progress with the modeled predictions and determine if remedial actions are warranted. The Phase 2 construction scheduled for the South Unit in 2010-2012 will afford an opportunity to take corrective actions in the North Unit should the need arise.

- "CDFG may want to conduct a before and after study to count the wildlife using the site."

Current avian use (e.g. "before" data) as well as the implications for avian use associated with the habitat conversion of 967 acres to tidal marsh and the no project alternative are discussed at length below. Post construction avian monitoring is being added as mitigation measure PHS-1c. Avian use and revegetation will be monitored in the North Unit. If the marsh plain is not progressing along the projected revegetation trajectory depicted in DEIR Figures 2-6a, b, and c; physical conditions will be evaluated and adaptive management measures will be developed. The data collected from monitoring the North Unit (planned for construction in 2007) will be used to inform the final design in the South Unit (planned for construction in 2010 to 2012).

Bird Strike Hazard Data: The first step in analyzing the effects of the project is to analyze the current bird strike hazard. The DEIR for the proposed project (DFG 2006) reviewed five bird strike hazard reports submitted to the Napa County Airport by aircraft pilots and owners since 2003. The FAA has since provided additional bird strike data for incidents that occurred at the airport (A. Kratovil 2006). Table 1 presents data provided by the FAA, including: incident date, time, runway, aircraft height, speed, damage, weather, bird species involved (when known), and comments. The table includes data from 33 bird strike incidents reported to the FAA and 2 incidents reported to Napa County Airport (but not to the FAA) during the period from January 2001 through June 2006. Accordingly, a total of 35 bird strike incidents make up the data in Table 1. The Relative Hazard Score (explained below) of each species or group of species to aircraft has also been added Table 1.

The number of bird strike incident reports made per year ranged from 2 (in a partial year) to 9. The breakdown of bird strike incident reports by year is as follows: 9 in 2001, 5 in 2002 and 2004, 4 in 2003, 8 in 2005 and 2 to date in 2006. No damage was reported in association with 29 of the 35 incidents. Minor damage was reported from 2 incidents; damage with unknown extent was reported in 3 incidents. An aircraft on approach hit a single duck in January 2003 and reported substantial damage[2]. The bird strike was reported to have no effect on the flight in 23 of the 35 incidents, while precautionary landings were made in 5 cases; in 3 cases take-off was aborted; no data were reported for 3 cases and "other" was reported for 1 case.

The number of incidents varies considerably between the runways. Runway 18R/36L is the primary runway; Runway 18L/36R is not lighted and used only during daylight hours, Runway 6/24 is used under specific wind conditions. Twenty-seven[3] of the 35 bird strikes (77%) occurred

[2] The FAA did not receive a reply to a letter seeking additional information on the damage to the aircraft.
[3] We included the report labeled as occurring on Runway 17L in this total; however, there is no Runway 17L at the Napa County Airport.

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Table 1
Bird Strike Data

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on Runways 18R/36L and 18L/36R. Eight bird strikes were reported in association with Runway 6/24[4].

The number of bird strikes per month (sum for all years 2001-2006) ranged from no incidents in March, April and August to 7 incidents reported in December. Shorebird migration occurs in late summer/early fall and spring and waterfowl move through the Bay Area during the winter, arriving as the weather turns blustery in their summering grounds to the north. Bird strike reports for other months include: 3 in January, 2 in February, 6 in May, 4 in June, 2 in July, 2 in September, 5 in October, and 4 in November.

Airport use likely varies with the time of day, presumably primarily occurring during daylight hours. This variation in the volume of aircraft traffic results in a difference in the number of bird strike incidents during day and night. The highest number of incidents (for all years combined) occurs in the morning (15 incidents), followed by the afternoon (9 incidents). Two-thirds of all bird strike incidents (24 incidents) occur between 6 am and 6 pm. Four incidents were reported between 6 pm and midnight. No incidents were reported between midnight and 6 am. Time was not recorded in 7 of the reports.

Figure 1 indicates approximate aircraft heights of planes above the salt ponds. 17 of the 35 bird strike incidents occurred while aircraft were on the ground. These involved the following birds: gulls, raptor or owl, falcon, sparrows, rock pigeon, ducks, Canada goose, and unidentified small and medium birds. Species such as gulls and rock pigeons roost on open spaces and their presence is very likely independent of the salt ponds or future wetlands. Seven (4 on approach and 3 while climbing) of the incidents included birds struck at altitudes between 1 to 50 feet, or immediately above the runway. Birds struck in these incidents included sparrows, gulls, rock pigeon, and unknown small birds. While these birds may use the salt pond levees and pond bottoms when they dry out, they are not associated exclusively with salt pond or wetland habitats, and conversion of the ponds to tidal marsh will not affect the presence of these birds**.**

The remainder of the reports involved 5 incidents between 51 and 500 feet and 2 incidents between 501 and 1500 feet. The reports cited the following birds in these incidents: ducks, purple martin, hawks, gulls and unknown small and medium birds. These bird strikes may have occurred while aircraft were over the salt ponds. Data were not provided for 4 incidents.

"Wildlife Hazard Management at Airports" is a manual for airport personnel jointly prepared by the FAA and the USDA (Cleary and Dolbeer 2005). The manual includes a system for evaluating the potential hazard to aircraft posed by various species of wildlife. This evaluation system

[4] The proportion of flights using Runway 6/24 is unavailable. Therefore, we are not able to determine if the number of incidents is proportional to runway use.

Figure 1 Airport Runways and Flight Paths

assigns a Relative Hazard Score (RHS) between 1 and 100 to species or groups of species. A RHS has not been assigned for all species; therefore, in some cases an estimated score was developed based on like species. When estimated values are used, they are noted as such. The higher the RHS, the greater the risk to aircraft. Species with a rank of 100, such as deer, are the most hazardous to aircraft. The RHS of the birds involved in the bird strike incident reports at the Napa County airport are presented in Table 2 below. Bird species were not identified in 12 of the reports.

Table 2
Relative Hazard Score of Birds Cited in Bird Strike Reports at the Napa County Airport

Bird	Relative Hazard Score	Number of Reported Incidents
Sparrows & "small birds"	4	3
Purple martin & killdeer	10[a]	2
Rock pigeon & owl	23	6
Gulls	24	6
Hawk	25	1
Ducks	39	3
Canada goose	55	2

Note:
a) The RHS for purple martin and killdeer was assumed to be 10,
based on their similar body size as compared with shorebirds, blackbirds and starlings.

In summary, 35 bird strike incidents were reported at the Napa County Airport between January 2001 and February 2006. No damage was reported in 29 cases, and there was no flight effect in 23 cases. There was one report of substantial aircraft damage due to a single duck in January 2003. Birds were struck primarily while planes were either on the ground (17 of 35) or within 50 feet of the ground (7 of 35). Two incidents were in the air but gave no specific height data. The birds struck were gulls, raptor or owl, falcon, sparrows, rock pigeon, ducks, Canada goose, and unidentified small and medium birds. These birds are not necessarily associated with the salt ponds. Gulls sit in open spaces where they can see 360 degrees, such as on runways. Geese and ducks, although water associated birds, also eat grass and have been observed on airport grounds.

The foregoing analysis of reported bird strike hazards coupled with the bird use analysis presented in the Biological Resources section 4.2 of the DEIR provide baseline data for comparison with post project conditions. Mitigation Measure PHS-1c requires avian monitoring at the site and a comparison of pre- and post construction avian RHSs. A new mitigation measure has been identified. Mitigation Measure PHS1-d will require implementation of adaptive management measures to minimize bird strike hazards.

DFG's adaptive management approach will utilize data obtained from site monitoring to inform identification and selection of appropriate management actions. DFG will work cooperatively with the Napa County Airport and the FAA to identify habitat conditions that may influence bird strike hazards. The identification of a problem will begin by analyzing potential changes in bird strikes. DFG will analyze this data if it is provided to them (as it is otherwise unavailable). Data analysis will include: number and species of birds, location of incident, height of aircraft, affects

of the strike, etc. If the data show that a problem has resulted from habitat changes at the Project site then DFG will address the issue. The FAA's Wildlife Hazard Management at Airports manual (Cleary and Dolbeer, 2005) provides a collection of management options. In addition, as explained above, Phase 2 construction scheduled for the South Unit in 2010-2012 will afford an opportunity to take corrective actions in the North Unit should the need arise to adjust marsh plain surface elevations to accelerate vegetation coverage.

The adaptive management plan will also incorporate guidance included in Federal Aviation Regulations (FAR) Part 77 Objections Affecting Navigable Airspace. FAR Part 77 defines the location (imaginary surfaces) where mature trees could affect aircraft passage. The project does not include planting trees in the salt marsh habitat. Long term site management will track tree growth locations and take appropriate measures if trees should penetrate the imaginary surfaces defined in the regulation.

Issue 1.b. There should be a more complete evaluation of bird strike hazard potential for the No Project Alternative

The no project alternative would create a habitat comprised of seasonal open water ponds, fed by precipitation. Comments suggested that the no project alternative would result in use of the site by fewer birds and thus reduce the potential for bird strikes.

Bird strike hazard potential depends on bird species, behavior and proximity to aircraft. Bird presence and behavior depends on many habitat factors such as cover, prey abundance, migratory patterns, salinity, and weather. Salinity has been the most important factor affecting bird use at the project site because it has a strong effect on the presence of prey items and vegetative cover. The sections below discuss changes to bird use in three salt pond and former salt pond sites to answer two primary questions:

a) What will happen in the absence of the restoration project, i.e. if the No Project Alternative were selected as the Preferred Alternative?

b) How does bird use in tidal marshes compare with salt pond bird use?

Data from the Napa Plant Site, the Napa-Sonoma Marshes located on the west side of the Napa River across from the plant site, salt ponds in south San Francisco Bay and wetlands adjacent to the Santa Barbara airport are presented and discussed below.

The No Project Alternative: In the absence of the restoration project many other wetlands and aquatic resources will continue to occupy areas on 3 sides of the airport. In addition, wetlands and ponds are located on airport property.

- The freshwater oxidation ponds of the Napa Sanitation District are located to the northwest. The oxidation ponds are used by waterfowl for foraging, rafting, and nesting (Berner et al. 2003).

- Bull Island and Fagan Marsh Ecological Reserve comprise hundreds of acres of wetlands located immediately to the west of the airport

- The Napa-Sonoma Marshes restoration project salt ponds (thousands of acres) and the Napa River are to the west, and

- Seasonal wetlands associated with No Name Creek are on airport property south of Runway 6/24.

The No Project alternative would result in a habitat comprised of seasonal open water ponds, fed by precipitation and occasional levee overtopping from the Napa River and No Name Creek. The No Project alternative also has a potential over time for levee failure and inadvertent, uncontrolled return of tidal action.

The conditions and character of the ponds will change even with the No Project alternative because of decreasing pond salinity. The salinity at the project site is changing (Table 3) as a result of Cargill's phase-out operation[5] as required by the purchase agreement between Cargill and the State of California. Table 3 lists the pond number, pond type and pond salinity from 2003 to 2006 as well as the total number of birds using each pond type by year. While in operation, the salt ponds at the Napa Plant Site supported limited bird use because hypersaline conditions limited available prey resources. The salinity was so high it precluded the growth of aquatic macrophytes (plants) and limited the diversity and presence of aquatic invertebrates. Aquatic invertebrates are unlikely to inhabit pond waters with salinities above 200 parts per thousand (ppt) (Siegel and Bachand 2002). As salinities decrease, vegetation germinates and the aquatic invertebrate community diversifies. These conditions will improve bird habitat (increasing cover and forage) resulting in increased bird use. Therefore the status quo will not remain under the No Project alternative.

[5] The phase-out operation is described in detail in DEIR Section 2.12.1.

Table 3
Napa Plant Site Changes in Salinity and Bird Use, 2003 through 2006

Pond Number	Pond Type	Salinity Range in Parts per Thousand (ppt)[a]	Total Number of Birds Observed Annually[b]
9 and 10	Pickle Ponds (North Unit)	2003 = 44-250 2004 = 57-252 2005 = 82-159 2006 = 36-40	2003 = 89 2004 = 181 2005 = 110 2006 = 133
B-1, B-2, B-3, Unit 3	Pickle Ponds (South Unit)	2003 = 115-313 2004 = 6-255 2005 = 78-247 2006 = 48-155	2003 = 111 2004 = 1928 2005 = 643 2006 = 2985
W1, W2, W3	Wash Ponds	2006 = 28-38	No observations were made in the wash ponds
CB 1-9	Crystallizer Beds	2003 = 223-293 2004 = 182-255 2005 = 116-259 2006 = 146-158	2003 = 258 2004 = 404 2005 = 861 2006 = 3239

Notes:
Salinity data were collected by Cargill and DFG (personal communication from B. Ransom and K. Taylor).
Bird use data were collected by USGS (2006).

To detect trends in bird use at the Napa Plant Site, U.S. Geological Survey (USGS) staff monitored bird use from April 2003 through March 2006 (USGS 2006). Monthly surveys were conducted as follows: 9 surveys conducted from April through December 2003; 7 surveys conducted from July through December 2004; 12 surveys conducted from January through December 2005; and 3 surveys conducted from January through March 2006. Table 4 shows the detail of bird type by year and RHS. In 2003 there were 451 shorebirds (RHS of 10), where as in the first 3 months of 2006 there were 6,311 shorebirds observed at the site. Cargill's phase-out operation is changing the condition of the ponds and data suggests that bird use is changing in response to these changing physical conditions. As salinity is reduced in the phase-out of salt production operations, the ponds will likely support aquatic invertebrates and seasonal vegetation (e.g., *Ruppia* species and *Cotula coronopifolia*), increasing the foraging opportunities for a variety of bird species.

Figure 3 shows bird use at the site from 2003 to March 2006, plotted with the maximum salinity of each pond unit. There is a large increase in total number of birds observed in 3 surveys in 2006 compared with 12 surveys in 2005. Shorebirds are the dominant group of birds in all pond types, in all years, except in the crystallizer beds in 2005 when gulls predominated. The species present in flocks with more than 200 birds in one pond in 2006 were all shorebirds, including: western sandpiper, black-bellied plover and dunlin. Shorebirds have a RHS of 10, which is low on the scale from 1 to 100 (Figures 2 and 3).

Table 4
USGS Bird Data for the Napa Plant Site Salt Ponds, 2003 to 2006

Table 4

Table 4

Table 4

Table 4

Figure 2 Total Number of Birds Per Year by Relative Hazard Score

Figure 3 Bird Use in Pond Units by Year and Relative Hazard Score with Annual Maximum Salinity

Shorebirds tend to fly at lower elevations than ducks, geese and hawks. This tendency to fly lower and their generally smaller body size contributes to shorebirds having a lower RHS (10) than the larger, higher flying, and flocking species; e.g., ducks (RHS=39) and geese (RHS=55). The total number of birds with a RHS greater than 24 (i.e., ducks, herons, vultures, gulls, geese, hawks, and cormorants/pelicans) is increasing as the salinity decreases: 4 in 2003, 84 in 2004, 692 in 2005 and 120 in the first 3 months of 2006. The general movement patterns of these birds vary somewhat by group. Hawks and vultures will hunt over both land and water. Ducks and geese may move between the site and the Napa oxidation ponds, as well as to the airport, the Napa River, the Napa-Sonoma Marshes, and San Pablo Bay. Shorebirds will likely tend to forage or roost at the site during high tide and move to the intertidal mudflats on the river or San Pablo Bay at low tide for foraging.

The data presented in Figure 3 for ponds CB 1-9 and B-1, B-2, B-3, and Unit 3 suggest that as salinity decreases, total abundance, abundance of flocking shorebirds and birds with higher RHS are increasing. Under the No Project alternative bird activity will likely continue to increase.

Bird Use of Tidal Marsh and Open Water Ponds: Studies in the San Francisco Bay have documented that salt ponds support a higher density of birds than other bayland habitats (Takekawa et al., 2001, Stralberg et al. 2003). Many wildlife biologists and bird enthusiasts advocate for retaining salt ponds in the Bay Area specifically for the purpose of providing open water habitat for shorebirds and waterfowl. Evidence of the greater abundance of birds in salt pond habitat is provided in the following sections. Data comparisons from the Napa-Sonoma Marshes, south San Francisco Bay and an experimental restoration project near the Santa Barbara Airport are presented to answer the question: How does bird use in tidal marshes compare with salt pond bird use?

Napa-Sonoma Marshes: Data are available from the conversion of salt ponds to tidal marsh habitat in the Napa-Sonoma Marshes on the west side of the Napa River. Napa-Sonoma Marshes Ponds 1, 1A, and 2 are operated as open water, unvegetated ponds whereas Pond 2A was breached to tidal action in 1995 and 1997. After breaching, Pond 2A (525 acres) was more than 90 percent covered by emergent vegetation in less than five years. Figure 4 shows the evolution of bird use in Pond 2A as it transitioned from open water to vegetated marsh habitat. This figure clearly shows a decline in total number of birds, and a transition in the types of birds that utilize the habitat. Birds that have high RHS, such as ducks, were common in Pond 2A in the initial years after restoration. However, there has been a noticeable decline in duck abundance as the area of open water habitat decreases. The total number of shorebirds[6], often present in large flocks, declined between 1999 and 2005. The number of land birds has increased as the vegetative cover has increased. The land birds observed are predominantly small, non-flocking species (song sparrows, yellowthroat, and wrens) with low RHS. These birds tend to fly low and close to the marsh vegetation.

Figure 5 compares bird use for the period between 2003 and 2005 in two former salt ponds: Pond 1A, an open water area and Pond 2A, a tidal marsh habitat. These ponds are of similar size (528 and 525 acres, respectively) and are in close proximity to one another. The data clearly illustrate

[6] Total of medium and small shorebirds as shown in Figure 4.

Figure 4 Evolution of Bird Use in Pond 2a

Figure 5 Comparison of Bird Use Between Ponds 1a (Open Water) and 2a (Tidal Marsh)

that bird abundance is substantially higher in the open water salt pond. Total bird abundance over the three-year period is more than an order of magnitude (ten times) greater in Pond 1A than in Pond 2A. The most important difference is the much smaller number of ducks (diving and dabbling) and shorebirds (small and medium) in the tidal marsh habitat as compared with the pond.

South San Francisco Bay Salt Ponds and Wetlands: Stralberg et al. (2003) studied salt pond restoration in the South Bay to evaluate potential effects on wetland bird communities. The study concluded that the loss (i.e., conversion) of salt ponds may cause substantial reductions in mean daily waterbird numbers, especially diving ducks, fish-eaters and shorebirds. This conclusion is supported by data from the South Bay that shows substantially higher bird densities in salt ponds than in tidal marshes for all seasons for common wetland bird communities (Figures 6 and 7, after Stralberg et al. 2003). Maximum shorebird and duck densities in tidal marshes were approximately 4 birds per hectare in late winter, compared with 50 birds per hectare in the same time period in salt ponds. (Please note the scale difference when comparing the data from the two figures.)

Work at Eden Landing in former salt ponds in Hayward looked at wet and dry season use of non-functional salt ponds. Precipitation flooded the ponds on a seasonal basis. This situation is analogous to the No Project alternative for the Napa Plant Site. Shorebird density increased when water depths were lower while waterfowl density increased in association with deeper water that ponded longer (Casady no date). Nineteen species of shorebirds were observed during both the wet and dry seasons; however, abundance decreased in the dry season. Sixteen species of waterfowl used the ponds during the wet season, whereas diversity and abundance of waterfowl during the dry season was lower.

Other Airports: The Santa Barbara airport is conducting a field level experiment to determine the feasibility of restoring tidal action to Goleta Slough's wetlands[7] Tidal action was restored to an approximately 2 acre area in the fall of 2005 and it is currently 40-50 percent vegetated. Avian surveys are conducted on the restored tidal area and on an adjacent 11-acre pickleweed seasonal wetland that receives non-point source flows. Pre-project baseline data (August 2004 to October 2005) and post construction weekly point count bird data are presented in Figures 8 and 9. Figure 8 compares baseline and post construction data for only waterfowl and shorebirds. More waterfowl used the seasonal wetland, prior to the introduction of tidal action. Pre-construction numbers of waterfowl observed per census on the 11 acres ranged from 50 to 200 ducks. After tidal action was restored to the 2 acre site the numbers of waterfowl declined to 1-15 ducks per census whereas up to 72 waterfowl per census were observed on the non-tidal site. The number of shorebirds increased after the introduction of tidal action, ranging from 4-98 individuals per census. The most numerous species were all small and small/medium sized birds including: killdeer, semi-palmated plover and least sandpiper.

Figure 9 compares post construction use (November 2005 through mid-July 2006) and RHS of all bird guilds using the experimental tidal and non-tidal control sites. The total number of ducks and grebes observed in the tidal and non-tidal basins were 82 and 939 respectively. The number

[7] The data cited in this discussion is preliminary, because of the on-going nature of this study.

Figure 6 Abundance of Waterfowl and Shorebirds Observed in Tidal and Non-tidal Wetlands Adjacent to the Santa Barbara Airport, August 2004 to July 2006

Figure 7

Figure 8 Seasonal Variation in apparent bird density (± SE) for South San Francisco Bay, CA tidal marshes (tides combined) in 1999/00 and 2000/01 (from Stralberg 2003)

Figure 9 Seasonal Variation in apparent bird density (± SE) for South San Francisco Bay, CA salt ponds (high tide) in 1999/00 and 2000/01 (from Stralberg 2003)

of shorebirds reflects the opposite balance: 77 in the non-tidal area and 932 in the tidal area. The Relative Hazard Scores (RHS) for ducks and grebes is 39 and for shorebirds is 10. In other words, opening the site to tidal action significantly reduces the RHS of the most abundant bird guild.

In summary, data clearly demonstrate that the No Project alternative would support higher bird abundance at the Napa Plant Site than Alternative 1, restoration of tidal action. The alternative (the all tidal emergent marsh alternative) would provide habitat for fewer birds, smaller birds, and birds with lower RHSs than the No Project alternative.

Issue 1.c. Why does the preferred alternative include a managed pond located within 10,000 feet of an airport used by turbine-powered aircraft since this habitat has the potential to permanently increase in bird strike hazard?

The managed pond is no longer part of the preferred alternative. DFG has elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential wildlife attractants (i.e., the managed pond) within 10,000 feet of the airport.

2. Land Use Conflicts/Planning Requirements

Issues from letters:

Several comment letters raised issues regarding land use conflicts and questioned the compatibility of a wetland restoration project with the Napa County Airport. The letters cited specific land use guidance at the federal, state and local levels that pertain to wetlands and airport compatibility, including the following:

FAA Advisory Circular 150/5200–33A: For airports that serve turbine-powered aircraft (such as the Napa County Airport), the FAA recommends a separation distance of at least 10,000 feet from any hazardous wildlife attractants. The proposed project is less than 0.5 miles from the Napa County Airport. Additionally, FAA recommends no hazardous wildlife attractants. The proposed project includes a potential wildlife attractant (i.e., the managed pond) within 10,000 feet of the airport.

In accordance with CEQA, Public Resources Code 21096, the **Caltrans Airport Land Use Planning Handbook** must be utilized in the preparation of environmental documents for projects within airport land use compatibility plan boundaries. The proposal must be submitted to the Napa County Airport Land Use Commission for review.

Response:

FAA Advisory Circular 150/5200–33A

It is acknowledged that the FAA recommends a separation distance of at least 10,000 feet from any hazardous wildlife attractants and that the proposed wetland restoration would occur less than 0.5 miles from the Napa County Airport, which does not meet FAA safety standards. DFG has elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential wildlife attractants (i.e., the managed pond) within 10,000 feet of the airport.

However, it is important to note that Napa County Airport has historically and continues to be surrounded by wetlands and aquatic features. The predecessor of the airport, the Napa Auxiliary Air Defense Field, was constructed in 1942 as a military airfield and deeded to Napa County in 1945 (Baily, n.d.). At that time wetlands and aquatic features occupied areas to the northwest, west, and southwest of the airfield. These areas remain wetlands or aquatic features to this day, including: the freshwater oxidation ponds of the Napa Sanitation District, the tidal marshes in Bull Island and Fagan Marsh Ecological Reserve, and the salt ponds of the project site (created in the 1950's). All the wetland and aquatic area described above are within a 10,000-foot radius of the end of Runway 6/24 (See DEIR Figure 4-7). In addition, wetlands are located on airport property at the ends of both Runways 6/24 and 18R/36L, and ducks and geese have been observed on the airport property (Shannon, pers. comm., 2005).

Caltrans Airport Land Use Planning Handbook

The *California Airport Land Use Planning Handbook* (*Handbook*) states that CEQA lead agencies shall utilize the *Handbook* as a technical resource with respect to airport noise and safety compatibility issues. Section 4.8 of the DEIR notes that the project site is within the Napa County Airport Land Use Compatibility Plan (ALUCP) zones (See DEIR Figure 4-6). Since the Napa County ALUCP zones were developed in accordance with the *Handbook*, and compatibility of the proposed project with those zones was evaluated, the *Handbook* was essentially utilized. The DEIR acknowledged that the proposed project would be inconsistent with the Napa County ALUCP zones and this was identified as a significant and unavoidable impact.

According to the *Handbook*, local jurisdictions must refer certain actions to the Airport Land Use Commission for review. The purpose of the review is to determine project consistency with the ALUCP. If the project is found to be inconsistent with the plan then the local agency must overrule the ALUCP with findings to approve the project. DFG is a state agency, not a local jurisdiction, and is not bound by this requirement. However, as stated above, the DEIR acknowledges the project's inconsistency with the Napa County ALUCP and considers this inconsistency a significant and unavoidable adverse impact. As such, for the project to be approved DFG must make written findings for each of the identified significant environmental effects (*CEQA Guidelines* Section 15091). In addition, if there are significant unavoidable environmental effects the DFG must state in writing the specific reasons to support its action based on the final EIR (Statement of Overriding Considerations) (*CEQA Guidelines* Section 15093).

3. Public Access/Trails

Comment letters were received that pertained to the public access and trail system component of the proposed project. Specifically, Napa County requested that the project create an extension of the proposed trail north of the railroad tracks to Fagan Marsh, staying to the west of the fenced RSA in the southeast section of Pond 10. The County further requested that the project include the option of the entire trail being constructed as a Class 1 bicycle path if funding can be obtained.

San Francisco Bay Trail (SF Bay Trail) requested an update regarding plans for a trail alignment along Eucalyptus Road in the Final EIR. SF Bay Trail also noted that trail access on the eastern levee of the North Unit (Ponds 9 & 10) is integral to the implementation of the Airport Area Bicycle Trail - Preferred Recreational Route. SF Bay Trail also requested a brief discussion of how users will be able to connect from the proposed Bay Trail alignment on Green Island Road (east/west) to the NPSR project's proposed trail paralleling Green Island Road (north/south).

Other comment letter requested that the project FEIR address the following issues relevant to public access and recreation:

- Address the possibility of a trail connection beginning along Eucalyptus Drive, extending to the Napa River along the northern border (interior levee) of the State Lands Commission parcel, and connecting with the Napa River levee.
- Address the possibility of overnight camping at the site.
- Allowing hunting of waterfowl would endanger low flying aircraft.
- Work with the City of American Canyon to include trail access around the old landfill.
- The state should work with their state counterparts to access the easement, which is a state easement, with the landfill.

Response:

Trails Connections

In devising the public access trail alignments for the proposed project DFG considered pertinent trail plans in the project vicinity including the SF Bay Trail, the City of American Canyon Wetlands Edge Trail, and the proposed Napa County Airport Bicycle Trail. DFG's proposed trails are entirely within the project property boundaries because that is where DFG has control and jurisdiction.

In order for the trail to go north along the eastern boundary of Pond 10 as one comment suggested, it would have to cross railroad tracks (See Figure 10, Trail Connection A). For security and public safety reasons, it is not desirable to have the trail cross the railroad tracks or have the trail go any closer to the airport than present public access allows. However, DFG's proposed trail alignment and levee improvements in this area would not preclude such a trail alignment from being constructed in the future. Additionally, DFG does not propose at this time to construct the trails to Class 1 bicycle path standards, however, bicycles would be allowed on the trails. Future trail connections within the DFG property to other proposed trails could be facilitated when those projects near fruition, provided that all parties' and agencies' concerns can be addressed. Also, DFG is open to improving the proposed onsite trail surface to Class 1 bicycle path standards in the future is a partnering entity becomes available to fund such improvements.

Figure 10 Planning Units and Public Access Features

Part of the proposed Bay Trail alignment runs along the north side of Green Island Road and then to the north of the east side of Green Island Road (See Figure 10, Trail Connection B). The proposed project trail alignment in this vicinity runs along the west side of Green Island Road on top of an improved levee within the property boundary owned by DFG. To connect these two proposed alignments users of the trail would have to cross Green Island Road, or the Bay Trail alignment could be moved to the south side of Green Island Road. The proposed project trail alignment travels along Green Island Road where it would split to enter the upland area or terminate at the Napa River.

There are two possible connection points from Eucalyptus Road (See Figure 10, Trail Connection C), either through the landfill area or closer to the City's treatment facility. This connection could be made in the future however it is outside of the project boundaries and not on property owned by DFG. Likewise, similar connections could be made for proposed trails around the American Canyon Landfill/State Lands Commission parcel (See Figure 10, Trail Connection C). When the City of American Canyon determines a preferred location for a trail connection to Eucalyptus Road DFG would be prepared to facilitate access from the proposed project site.

In addition to the proposed trails, DFG proposes to construct a primary staging area for parking, picnicking, restrooms, and boat launch centered around the barge channel. Hand launching of non-motorized watercraft (e.g., canoes and kayaks) would be possible at the existing boat dock and ramp in the barge channel. Gates on the site access road would be used to restrict public vehicle access to daylight hours. Due to the sensitivity of the proposed restored habitat, a limited project budget and limited resources for long-term maintenance, no overnight camping facilities are proposed as part of the project.

Lastly, waterfowl hunting may be allowed in the South Unit. The South Unit is the furthest from the airport. Waterfowl hunting is conducted using shotguns with very limited range. Due to this distance from the airport and the limited range of shotguns no risks would be posed to aircraft flying overhead. Public access is part of the proposed project, and DFG believes that public access is an important component of the project. The project is also within the jurisdiction of the San Francisco Bay Conservation and Development Commission's (BCDC). BCDC mandates that public access be provided along or in proximity of the Bay margins for projects under their jurisdiction, and the public access components of the project will be reviewed as part of the BCDC permitting process.

4. Airport Security Relative to Public Access

Issues from letters:

Several comment letters were received that pertained to the proposed public access and trail system component of the proposed project as it relates to Napa County Airport security. Concerns were raised regarding opening up the area to public use and how that could affect the ability to keep the airport secure and meet Federal security requirements.

Response:

As discussed under Master Response 3 above, public access is proposed as part of the project. It is one of BCDC's mandates to provide public access along or in proximity of the Bay margins as part of projects under their jurisdiction. This proposed project is within BCDC's jurisdiction.

The closest public access to the airport that is part of the proposed project would be a trail along the western side of Green Island Road. The public can presently access this point since Green Island Road is a public road. Access would be provided to the upland recreational facilities via a new access road off of Green Island Road. Gates on the site access road would be used to restrict public vehicle access to daylight hours. There would be a DFG employee residing in the existing residential housing on Green Island. The DFG warden for the Napa-Sonoma Marshes Wildlife Area (NSMWA) would patrol the site on a regular basis.

Since the proposed project's public access would not provide access any closer to the airport than presently exists, public access to the upland area facilities would be limited to daylight hours, and the DFG warden for the NSMWA would patrol the site on a regular basis, airport security would not be further compromised in any way by the proposed project.

As discussed in Master Comment 3, the presence of an active existing railroad corridor presents a major obstacle to the development of any trails running through the project area from north to south. Accordingly, to avoid the existing active railroad corridor and in order to eliminate any new airport security risks associated with increasing public access north and east of existing trails along Green Island Road, DFG is not proposing trails for the northern portion of the project area.

5. Flooding Impacts to the Airport

Issues from letters:

Several comments were received relating to flooding at the Napa County Airport. Many referred to the recent flooding that occurred at the airport during the New Year's Eve storm of 2006. This flooding resulted in closure of the airport for several hours. Many comments noted that this was the first closure in 60 years. This storm produced a flow in the Napa River at Napa of about 29,000 cfs with a stage of almost 30 feet, almost 5 feet above flood stage and less than one foot below the peak stage of record in March 1995 (30.5 feet).

Response:

To aid in response to the comments a brief description of drainage at the airport from the Draft EIR is provided below. In addition, a brief description of the flooding at the airport provided by Matt Jacobs, Operations Worker, Napa County Airport, is provided (Jacobs, pers. comm., 2006). Elevations in the following discussion are for the NAVD88 datum. The drainages described in the text below are shown on Figure 11.

There are 2 drainages adjacent to the airport: Fagan Creek and No Name Creek. Fagan Creek drains an area of approximately 6.8 square miles located east of the airport. Elevations range from almost 1,500 feet in the northeast edge of the watershed to near sea level at the mouth.

Fagan Creek enters airport property from the west, flows north between the airport and the Airpark Business Park, crosses under Airport Blvd near the terminal then curves west and drains through a double box culvert that runs for approximately 1,500 to 2,000 feet under runway 18R and taxiway K. During the New Year's storm of 2006 debris partially blocked this culvert and the capacity of the box culvert was exceeded. Fagan Creek flooded onto multiple taxiways including K and F depositing debris and mud that had to be removed.

Fagan Creek, including its double box culvert reach, is located more than half a mile north northeast of the project boundary and will not be affected by the project. Modeling used to evaluate potential flood impacts to the airport is based on the conservative assumption that the tidal height and range in Fagan Creek downstream of the box culvert will be unaffected by the project. It is possible that due to the increased storage volume from opening Ponds 9 and 10 to the tide, tidal height and range at the box culverts in Fagan Creek could decrease. If this occurs drainage through the culverts could improve.

No Name Creek drains an area of about 2.3 square miles east of the salt ponds and south of the airport. The watershed is generally flat with a small rise on the east edge up to an elevation of 300 feet. Over time, the watershed has changed from its pre-existing condition of nearly all open space, to the current land use, which includes the new upstream industrial park. This change in upstream land use has resulted in an increase in runoff volume and peak flows, and a change in the timing of these large events.

The channel starts near the southwest corner of the airport and is indistinct upstream. No Name Creek drains to a channel parallel and east of the Pond 10 eastern levee, past the end of runway 6/24 then discharges through a 48-inch gated culvert to Fagan Slough. During the New Years 2006 storm this drainage backed up, causing the creek to overtop its banks into Pond 10. The runways were not flooded by the over topping of No Name Creek because the runways are at an elevation of approximately 14 feet, and the creek flowed over the Pond 10 levees, which are at an elevation of approximately 10 feet and into Pond 10, instead of onto the runways.

DFG met with the County of Napa in August 2006 to discuss flooding issues at the Airport and the condition of the existing 48-inch gated culvert. In an effort to improve flooding conditions along No Name Creek, an agreement was made for both parties to contribute time and resources during development of this project to address the issues. The DFG agreed to fund and the County agreed to maintain a new drainage control structure to replace the existing 48-inch culvert and gate. CDFG agreed to include the proposed drainage control structure in the design bid package for Pond 9 & 10 construction. Because future construction of the RSA may further change the hydrology in No Name Creek, the County decided to conduct hydraulic analyses for the redesign of the drainage control structure. DFG agreed to include the redesigned drainage control structure in the bid package as long as the design was completed by the County prior to final plan development in December 2006. The Department will incorporate improvement of the airport levee in its Phase 1 project design and will seek funding to construct this improvement as part of the Phase 1 project.

As part of the wetland restoration project, the Pond 10 perimeter levee will be raised to elevation 10 feet. Portions of the levee are already at elevation 10 and lower portions are about 1 +/- foot

lower. This will make the Pond 10 levee elevation the same elevation as the existing outboard levee along the Napa River so the same level of flood protection as currently exists will be maintained. In addition, the 100-year tide in the Napa River, at an elevation of about 9 feet, is approximately 5 feet below the elevation of runway 6/24.

Flooding will not increase as a result of breaching the Pond 9 levee because levees will be raised to provide the current level of flood protection. Part of the project is to raise the levees along the eastern perimeter of the restored wetlands to an elevation equal to the existing outboard levee elevation to maintain the existing level of flood protection for all properties adjacent to the wetlands. As discussed above, the flooding that occurred during December-January of 2005-2006 was due to inadequate capacity of Fagan Creek. The project will not affect this flooding source either positively or negatively. No Name Creek, which did not flood the airport during that event, will still overtop the levees into Pond 10 before reaching an elevation sufficient to flood the runways. Also see response below regarding the potential to impact the instrument landing system.

Issues from letters:

Concern was raised regarding the potential to increase flooding by placing material in the portion of the potential future runway safety area located in the proposed project site.

Response:

The new upland area to be created in the southwestern corner of Pond 10 is meant to be compatible with the proposed RSA. The upland will be contained within the existing footprint of Pond 10 and will be at a maximum elevation of 7 feet, below the 10-foot top of the levees located along the eastern boundary of Pond 10. It will not affect the drainage to the immediate southeast of airport lands except for in those extreme cases when water levels in No Name Creek are sufficient to overtop the levees and drain into Pond 10. Since the elevation of the top of levee will still be approximately 4 feet lower than the airport runways there should be no impact on the ability of No Name Creek to drain without flooding the airport.

Issues from letters:

A comment was received regarding the potential to impact the instrument landing system for Runway 18R/36L located on County property near No Name Creek.

Response:

Based on the LIDAR data collected for the proposed project, the elevation of the instrument base located at the end of runway 18R/36L is about the same as the lowest elevations of the levee crest, about 8.0 to 8.5 feet. The lights are above this elevation. It is unknown if there was any flooding of the instruments during the New Year's Eve flood. However, evidence suggests that No Name Creek overtopped the Pond 10 levee, flowing into Pond 10 during the New Year's Eve flood (Jacobs, 2006). The proposed project would not change the way No Name Creek was designed to function and, under normal conditions, does function.

6. Funding Mechanisms for Active Management and Mitigation

Several comments were received relating to how DFG will fulfill its management and maintenance responsibilities, including mitigation commitments should funding be inadequate to accomplish the goals of the proposed project.

Response:

DFG's ability to maintain and manage Wildlife Areas and Ecological Reserves is dependent upon annual appropriations through the State budget. DFG already owns the property, which was acquired in 2003, so the added expense of purchasing land is not considered a project cost. The NPSR project is being designed to minimize long-term maintenance and management costs. The project focus on tidal restoration will minimize maintenance and management requirements in the long term since these natural systems maintain themselves over time. For example, introducing tidal action using large breaches instead of gated culverts minimizes long term maintenance and management obligations. In addition, elimination of the managed pond significantly reduces management activities.

DFG will manage and maintain the Napa Plant Site as part of the Fagan Marsh Ecological Reserve (North Unit) and the NSMWA (Central and South Units) . DFG has reviewed the financial resources available for these areas and has determined that regular operations and maintenance cost associated with the NPSR project can be covered under existing funding. Since the publication of the Draft EIR, DFG decided to select Alternative 1, Full Tidal Restoration, as the proposed project.

To assume that future funding for operations and maintenance would be reduced would be speculative. Section 15145 of the *CEQA Guidelines* discourage discussion of speculative impacts. However, for information purposes, in the event that a reduction of funding does occur the worst case scenario could be deterioration of the levees on the site due to lack of maintenance. If the levees were allowed to deteriorate they might not provide the same level of flood protection as they currently provide.

Construction of proposed improvements to the site is expected to be funded through the Wildlife Conservation Board and the philanthropic organizations that participated in the purchase and project planning funding. At this time DFG is in the process of securing funding to implement Phase 1 of the project in 2007. Phase 1 will likely include the North and Central Units.. DFG has not attempted to solicit funding for implementation of Phase 2 of the project because Cargill will not complete the desalinization, and subsequent land management transfer, of the South Unit until approximately 2010 at the earliest. The Phase 2 construction cycle will also afford DFG an opportunity to remediate issues that may arise on the Phase 1 areas in the first few years after construction.

DFG personnel will be responsible for monitoring the NPSR project. DFG will be responsible for implementing identified mitigation measures and making sure that they are monitored. DFG has similar requirements for other projects in the San Francisco Bay region and has been able to meet its obligations to implement required mitigation and monitoring as part of the CEQA process and for conditions required as part of necessary permits for project implementation. DFG

will continue to work with potential collaborators as it has on the Napa Marsh Restoration Project, collaborating with USGS (funded by grants through USGS and other agencies) to create a monitoring program that has been shown to be effective and accomplish the monitoring goals. Continuing a similar monitoring program relationship for the project is an avenue DFG is exploring.

DFG is open to partnering with other organizations and agencies (i.e., Napa County and California Department of Transportation) during the implementation phase of the project to provide local mitigation opportunities as appropriate for needed public infrastructure projects. This is not an EIR issue, but DFG will consider these types of mitigation opportunities, if approached, and incorporate them during implementation of the project in coordination with and subject to the approval of the agencies requiring such mitigation. Projects for which participation in the project is determined to be appropriate mitigation for biological impacts will be subject to separate environmental review and permitting.

2.2. Government Agencies Comments and Responses

1. U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Marine Fisheries Service (NOAA Fisheries)
Comments on the Draft EIR

DFG Responses to NOAA Fisheries Comments on the Draft EIR

1. NOAA Fisheries

NOAA-1: Opinion regarding beneficial aspects of the project

Response: This comment is a statement that NOAA Fisheries in general views the proposed project as beneficial for listed species under their jurisdiction and species managed under the Essential Fish Habitat provisions of the Magnuson-Steven Fishery Conservation and Management Act. No response is necessary.

NOAA-2: Operations of managed pond and effects to fish

Response: The managed pond is no longer part of the proposed project.

NOAA-3: Concerns over periodic dredging of barge channel

Response: The Department has no plans to periodically dredge the barge channel. The channel bathymetry (cross section dimensions) will come into equilibrium with the tidal prism that inundates the former wash ponds marsh plain when marsh vegetation becomes established. This mature channel condition, although narrower than the current channel, will be self-maintaining and dredging is not anticipated.

2. U.S. Department of Transportation
Federal Aviation Administration (FAA) Comments on the Draft EIR

DFG Responses to FAA Comments on the Draft EIR

2. FAA

FAA-1: Objection to the proposed project

Response: This comment is a statement that the FAA objects to the proposed project. No response is necessary.

FAA -2: Managed pond within 10,000-foot zone

Response: Please see Master Response 2.

FAA -3: Impacts to drainage of airport lands

Response: Please see Master Response 5.

FAA -4: Funding of management and maintenance activities

Response: Please see Master Response 6.

FAA -5: Consider the FAA's NOP letter (comments 6-12 below)

Response: This comment is a statement that DFG should consider FAA's comments made in response to the Notice of Preparation. Those comments are addressed below. No response to this comment is necessary.

FAA -6: Objection to proposed project

Response: This comment is a statement that the FAA objects to the proposed project. No response is necessary.

FAA -7: FAA Advisory Circular 150/5200-33A

Response: Please see Master Response 2.

FAA -8: Land use, wildlife attractants within 10,000 feet of an airport

Response: Please see Master Responses 1 and 2.

FAA -9: Recommend distance of 5 miles

Response: Please see Master Response 2.

FAA -10: Bird strike hazards

Response: Please see Master Response 1.

FAA -11: Bird strike hazards

Response: Please see Master Response 1.

FAA -12: FAA Advisory Circular 150/5200-33A

Response: Please see Master Response 2.

3. California Department of Transportation (Caltrans) Comments on the Draft EIR

DFG Responses to Caltrans Comments on the Draft EIR

3. Caltrans

Caltrans-1: Need to work out their concerns prior to permit submittal

Response: This comment is a statement that DFG will need an encroachment permit for any work done in the State Right-of Way. The proposed project does not require any work within the State Right of Way.

Caltrans-2: Inadvertent discovery of archaeological resources

Response: The proposed project does not require any work within the State Right of Way.

Caltrans-3: Encroachment permit needed

Response: The proposed project does not require any work within the State Right of Way.

4. California Department of Transportation Division of Aeronautics (Caltrans – DOA) Comments on the Draft EIR

DFG Responses to Caltrans - DOA Comments on the Draft EIR

4. Caltrans DOA

Caltrans DOA-1: Description of their role/authority

Response: This comment briefly describes Caltrans Division of Aeronautics' role and authority as it pertains to the proposed project. No response is necessary.

Caltrans DOA-2: Project understanding

Response: This comment briefly summarizes the proposed project. No response is necessary.

Caltrans DOA-3: Concern about project – bird strike hazards

Response: Please see Master Response 1.

Caltrans DOA-4: Worked with DFG in the past – Gnoss Field

Response: This comment is a statement that Caltrans Division of Aeronautics has worked in the past with DFG concerning bird strike hazards at other airports in the State. No response is necessary.

Caltrans DOA-5: Utilize Caltrans Airport Land Use Planning Handbook in preparation of environmental document

Response: Please see Master Response 2.

Caltrans DOA-6 Project has potential to increase bird strike hazards**:**

Response: Please see Master Response 1.

Caltrans DOA-7: Statement regarding airport safety zones

Response: Please see Master Response 2.

Caltrans DOA-8: Statement regarding land use inconsistency with FAA guidelines

Response: Please see Master Response 2.

Caltrans DOA-9: Encouragement to use FAA/USDA "Wildlife Hazard Management at Airports" document

Response: Please see Master Response 2.

Caltrans DOA-10: Statement that submission of a "Notice of Proposed Construction or Alteration (Form 7460-1)" to FAA may be required

Response: This comment is a statement that submission of a Notice of Proposed Construction or Alteration (Form 7460-1) to the FAA may be required. No response is necessary.

Caltrans DOA-11: The proposed project is inconsistent with Napa County ALUC's Plan and Caltrans Handbook – did not address potential impact to air traffic patterns under Transportation/Traffic.

Response: Please see Master Response 2 for a discussion of land use conflicts/planning requirements. Also, please see Master Response 1 regarding a discussion of bird strike hazards. The project would have no impact to air traffic patterns.

Caltrans DOA-12: Impact drainage of airport lands

Response: Please see Master Response 5.

Caltrans DOA-13: Funding for management and maintenance

Response: Please see Master Response 6.

Caltrans DOA-14: Must submit proposal to Napa County ALUC for review

Response: Please see Master Response 2.

Caltrans DOA-15: Statement regarding aviations role in California's transportation system and economy

Response: This comment is a statement regarding the role that aviation plays in California's transportation system and in California's economy. No response is necessary.

Caltrans DOA-16: Statement regarding the importance of compatible land uses surrounding airports

Response: Please see Master Response 2.

Caltrans DOA-17: Encourage DFG to modify proposal to be consistent with applicable plans and policies

Response: Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. At these meetings the issues regarding applicable plans and policies were discussed. The DFG elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and to public safety in the form of bird strike hazard potential.

Caltrans DOA-18: Statement saying these are Caltrans comments regarding airport related issues – should contact District 4 office for surface transportation issues.

Response: Caltrans District 4 submitted a comment letter and those comments are responded to above.

5. California Regional Water Quality Control Board (RWQCB) Comments on the Draft EIR

DFG Responses to RWCQB Comments on the Draft EIR

5. RWQCB

RWQCB-1: Statement regarding project understanding and general support for the project

Response: This comment is a statement regarding the project understanding and that the RWQCB is in support of the proposed project. No response is necessary.

RWQCB-2: Expect to issue a Waste Discharge Permit – generally prefer full tidal restoration but will work with DFG if managed pond alternative is selected

Response: This comment is a statement that the RWQCB expects to issue a Waste Discharge Permit/401 Certification for the project and they generally prefer Alternative 1, Full Tidal Restoration, over the proposed project. The California Department of Fish and Game elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to avoid potential impacts to public safety in the form of bird strike hazard potential, and to water quality.

RWQCB-3: Comment regarding sampling for salinity and toxicity and monitoring

Response: This comment discusses future permit applications for the proposed project. The project intends to apply for coverage under the general National Pollution Discharge Elimination System (NPDES) permit for storm water discharges during construction and a Section 401 Water Quality Certification for construction and operation of the proposed project.

Salinity is being monitored and potential salinity discharge concentrations have been modeled and are presented in detail in Appendix A (Napa Plant Site Restoration Project Modeling Tech Memo #1B) to the Draft EIR. The model predicts that the discharge concentrations of salinity will be well below the discharge limit for the NSMRP (monthly average limit of 50 grams per liter) and the South Bay Salt Ponds Initial Stewardship permit due to Cargill's phase-out operation and the expectation that ponds will be breached in the dry.

Toxicity testing is not planned because the ponds will be breached in the dry thus the water discharged from the ponds will be comprised only of the ambient tidal Napa River water and the small amount of constituents that have dissolved into the water column within a single tidal cycle (approximately six hours). Modeling has shown that the amount of salinity that will dissolve into the tidal water is well below likely discharge limits. The potential for toxicity due to other constituents of concern is low based on the comparisons with residential Risk Based Screening Levels and *Draft Staff Report – Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines* (San Francisco Bay RWQCB 2000) (2000 Draft Guidelines). This evaluation is discussed further in response to comments RWQCB-8 and RWQCB-12, below.

Additional pond, Napa River, and Fagan Slough sediment and water samples were collected May 4, 2006 by DFG. The samples are being analyzed for metals, including methyl mercury. The results will be discussed in the project's permit application. We appreciate the Board staff's cooperative approach toward developing a cost effective monitoring plan.

RWQCB-4: Add explanation in summary table why no mitigation is required for biological impacts

Response: Impact BIO-3 states that the wetland loss associated with the project is less than significant and that no mitigation is required. The project will largely result in the conversion of Waters of the U.S. (salt ponds) to tidal wetlands. Some fill will be placed in non-wetland waters and wetlands to construct the project. However, there will be a net gain of wetlands as a result of lowering of levees in certain locations. Therefore the project will be self-mitigating. The quantification of wetland impacts will be completed as part of the U.S. Army Corps of Engineers Section 404 permitting process.

RWQCB-5: Add explanation in summary table why no mitigation is required for Impact WA-Sed-1

Response: Impact WA-Sed-1 states that no mitigation is required for less than significant impacts from discharge of contaminated storm water during construction because measures to reduce these potential impacts were included in the project description. As part of the proposed project, a Stormwater Pollution Prevention Plan (SWPPP) and a Stormwater Monitoring Program will be developed and implemented. The Clean Water Act, National Pollutant Elimination System (33 United States Code 1342) requires that construction projects disturbing more than 1 acre of land must develop and implement a SWPPP. The project will obtain and comply with the state's NPDES General Permit for Storm Water Discharges associated with construction activity by incorporating Best Management Practices (BMP's) into the project construction phase. Implementation of BMP's in the SWPPP will reduce the impacts of stormwater leaving the site to less than significant.

RWQCB-6: May require 50 g/L monthly average limit for salinity discharge

Response: WA-Sed-2 discusses potential regulatory limits to be set by the RWQCB for salinity discharges from the project site. The managed pond is no longer part of the preferred alternative. DFG has elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and public health and safety.

RWQCB-7: Is more sampling of priority pollutants going to be done before final determination of less than significant impact?

Response: Additional pond, Napa River and Fagan Slough sediment and water samples were collected May 4, 2006 by DFG. The samples are being analyzed for metals, including methyl mercury. The results will be discussed in the project's permit application.

RWQCB-8: Why weren't more samples collected from Unit 3, B-2, and B-3?

Response: Additional samples were not collected from Unit 3, B-2, and B-3 since based upon evaluation of the Phase 1 results there was no basis for concern.

The following two reports contain multiple figures and tables reporting upland sampling locations and analytical results:

- *Site Investigation Report, Cargill Salt Napa Site and Baumberg Concentrator Ponds, Volume 1 – Report and Attachments A through C* (CH2M Hill 2003)

- *Site Removal Report, 2983 Green Island Road, American Canyon, California* (Treadwell and Rollo 2003)

The second report also includes figures showing the upland areas that were excavated. The tables and figures from these reports showing the upland sampling locations and results and excavated areas are included as Appendix A-1 and Appendix A-2. The upland area will be exposed to precipitation only, not to tidal action.

As discussed in Section 4.5, Hazards and Hazardous Materials, of the EIR, a Phase 2 site investigation was performed in Fall 2002 to characterize both the upland areas of the site and the salt ponds (CH2M Hill 2003). A total of 84 upland soil samples (68 discrete soil samples and 16 composite soil samples) were collected from the barge channel dredge spoils stockpiles, the southern levee, the residential area, and the maintenance areas. Sampling locations were selected to represent overall site conditions or targeted locations with evidence of possible contamination, such as soil staining or low points in the surface topography. Samples were analyzed for some or all of the following constituents: TPH as gasoline, as diesel, and as motor oil (TPH-g; TPH-d, TPH-mo, respectively), VOCs, SVOCs including PAHs, PCBs, and metals. Based on the sampling results, Cargill Salt Company (Cargill) excavated and disposed of soil in the maintenance area and the residential area with elevated concentrations of TPH and lead, respectively, (Treadwell and Rollo 2003).

In response to RWQCB Comment 8, URS compared the results of the upland sampling to the RWQCB Residential and Commercial Environmental Screening Levels (ESLs) for shallow soil that is not a potential drinking water source. These criteria were developed to be protective of human health and terrestrial biota as well as protecting against leaching and subsequent impacts to groundwater, adverse nuisance conditions, and vapor intrusion into buildings (RWQCB 2005). The discussion below describes the findings of the comparison between the ESLs and the soil concentrations of the constituents listed above for the purposes of evaluating potential impacts on upland terrestrial wildlife.

Out of the 84 samples, 39 did not exceed any Residential ESLs; 45 samples contained concentrations of one or more constituents that exceeded a Residential ESL. The following bullets describe these 45 samples:

Soil Samples Removed/Excavated (No Exposure)

- Soil in the area of 18 of the samples was excavated by Cargill in 2003
    - 12 samples in the maintenance area due to elevated TPH concentrations
    - 6 samples in the residential area due to elevated lead concentrations.

- Two samples were located in the sump and drain in the steam cleaning/wash area. Materials from the sump and drain were cleaned out and disposed of during the 2003 Cargill excavation fieldwork.

- One sample was located in the sump north of the maintenance shop. This area could not be excavated during the Cargill excavation activities due to a heavily corroded grate. However, Cargill stated they would remove the sump and replace it later.

Samples with No Habitat (No Exposure)

- Two samples were concrete cores located inside the maintenance shop, which is not accessible to terrestrial biota.

- One sample is located eight feet below ground surface (bgs) in the southern levee. The depth of ecological exposure ends at six feet bgs (DTSC 1998). Therefore, contaminant concentrations do not need to be evaluated below six feet bgs since there are no burrowing animals typically below this depth. In addition, once the project site is open to tidal action the levees will regularly be subjected to flooding within 5 feet from the top, which will saturate the soils below 5 feet. Animals do not burrow into saturated soils. The concentrations were not elevated in the samples collected in the same boring at five feet bgs.

Samples with Metals Concentrations within Range of Background

- Fifteen samples contained only arsenic and/or cobalt concentrations that exceeded the ESLs. URS compared these concentrations to background concentrations for the San Francisco Bay area established by Lawrence Berkeley National Laboratory in 2002 (LBNL 2002). Background is defined as naturally occurring concentrations. The purpose of this comparison is based on the understanding that concentrations of naturally occurring inorganic constituents need not be remediated to lower concentrations than background. The concentrations of arsenic and cobalt in the 15 samples were below the proposed upper estimates of background metals concentrations represented by the 99th percentile (LBNL 2002).

Low Exceedances of Residential ESLs

- The remaining six samples had low exceedances of Residential ESLs, as follows:

    - MS-3 (northwest of maintenance shop) exceeded the Residential ESL for vanadium. However, the concentration was below the Commercial ESL and below the Urban Area Ecotoxicity Criterion (provided in RWQCB 2005 to be protective of terrestrial biota). There are no known sources of vanadium associated with past or current operations.

    - RB-04 (south of locomotive barn) and DB-01 and DB-03 (in the debris burial area) exceeded the Residential and Commercial ESLs for diethylphthalate. The trace

concentrations of diethylphthalate (less than the practical quantitation limit) suggest the possibility of sample contamination, as from latex gloves or common containers.

- DB-06 (in the debris burial area) exceeded the Residential and Commercial ESLs for acetone. However, the value was estimated by the laboratory since the concentration was greater than the method detection limit but less than the practical quantitation limit. In addition, acetone is a common laboratory contaminant, and the concentration is only slightly higher than the ESLs.

- RDA-02 (near the rail dip/storage area) exceeded the Residential ESLs for three PAHs. However, the values were estimated by the laboratory since the concentrations were greater than the method detection limit but less than the practical quantitation limit. In addition, the concentration was below the Commercial ESL for two of the three PAHs and below the Urban Area Ecotoxicity Criteria (RWQCB 2005) for all three PAHs.

- Some of these six samples had arsenic or cobalt concentrations that exceeded the ESLs. However, all of the metals concentrations were below the proposed upper estimates of background metals concentrations in the San Francisco Bay Area represented by the 99th percentile (LBNL 2002).

These six samples are isolated occurrences located within a developed area (that will remain developed) with unattractive habitat (e.g., pavement, buildings, maintenance operations, etc.) that has limited ecological value. The upland area is described in CH2M Hill 2003 and Treadwell and Rollo 2003 as follows: the upland portion of the main Napa Plant Site is mostly developed and includes a number of structures. The maintenance shop, locomotive barn, and steam cleaning wash area with attached oil shed are still present. Nearby to the northwest are the former sandblasting/painting area, former paint shed area, and existing railroad yard storage shed. This maintenance area is mostly paved and is still partially in operation with the exception of the locomotive barn and railroad. In the southern portion of the upland area is a rail storage area, railroad tie storage area, and two former railroad yard storage sheds. In the eastern portion of the upland area is a discarded railroad tie dump area and a debris burial area that was reportedly excavated by Cargill. In the northeastern portion of the upland area is a residential area that includes two residences (one occupied and one unoccupied) and two garages. Adjacent to the barge channel to the north are barge channel dredge spoils. To the south of the ponds is a southern levee.

Based upon the review, the potential impacts to upland terrestrial wildlife are expected to be less than significant due to the limited remaining surface soil contamination and the limited ecological value of the upland area.

It should be noted that most human exposures at the project site will be recreational, not residential. Therefore, comparing these contaminants to residential ESLs is conservative for public users of the proposed project site.

RWQCB -9: References for chemical pollutants should be updated.

Response: Water and sediment samples are collected annually throughout the San Francisco Bay area as part of the San Francisco Estuary Institute (SFEI) Regional Monitoring Program (RMP). Historical sampling stations have included locations in the Napa River and San Pablo Bay. Data have not been collected in the Napa River since 2001. Sampling in San Pablo Bay was conducted through 2005. Although summaries of data trends are available through 2005, the most recent actual data available on the website is from 2003 (**http://www.sfei.org/RMP**).

Table 4.7-4 includes mercury concentration data in Napa River, Napa Slough, and the salt ponds from samples collected at the NSMRP site in 2001. The following additions were made to update Table 9:

- Mercury concentrations from the SFEI RMP sampling in San Pablo Bay in 2003 were added to Table 4.7-4.

- Mercury data from the 2002 sampling at the proposed project site were added to Table 4.7-4.

The discussion preceding Table 4.7-4 was updated accordingly. URS reviewed the information on the RWQCB website regarding the mercury TMDL work and the various reports available on the SFEI website and did not find additional, recent mercury analytical data.

Table 4.7-1 was updated as described under Comment 10 below.

Since **Table 4.7-2** included data from October 2003 and no more recent data is available through SFEI, this table was not updated.

Tables 4.7-3a and 4.7-3b include sampling results from the proposed project site collected in 2002. Additional water and sediment samples were collected at the proposed project site on May 4, 2006 and analyzed for metals, and this data will be analyzed in the RWQCB permit.

RWQCB - 10: Update Table 4.7-1 with SFEI data

Response: Table 4.7-1 contains regional water chemistry data from San Pablo Bay, Napa River, and Napa Slough measured as part of the NSMRP in October-November 2001. Water chemistry data is collected annually throughout the San Francisco Bay area as part of the SFEI RMP. Historical sampling stations have included locations in the Napa River and San Pablo Bay. Data have not been collected in the Napa River since 2001. Sampling in San Pablo Bay was conducted through 2005. Although summaries of trends in the data are available through 2005, the most recent actual data available on the website is from 2003 (**http://www.sfei.org/RMP**). Therefore, water chemistry data from the SFEI RMP sampling in San Pablo Bay in 2003 was added to Table 4.7-1.

RWQCB -11: Table 4.7-3 – separate data for metals that the Board does not have draft guidelines.

Response: Per the comment, Table 4.7-3 was split into Tables 4.7-3a and 4.7-3b. The metals for which the RWQCB does not have draft guidelines were moved to Table 4.7-3b, and the background data provided by RWQCB staff (Naomi Feger) were added to this table. The following sentences were added to the text: "Table 4.7-3b presents the soil sampling results for selected metals which are typically thought not to be contaminants of concern in bay sediments and for which the San Francisco RWQCB does not have guidelines, including antimony, barium, beryllium, cobalt, molybdenum, thallium, and vanadium. Since the RWQCB does not have criteria for these metals, regional background concentrations are provided in the table for qualitative comparison."

RWQCB -12: Address quality of dredged material used for beneficial reuse.

Response: The barge channel dredged material proposed for beneficial reuse on the site was sampled during the Phase 2 site investigation performed in fall 2002 (CH2M Hill 2003). Six samples were collected (two locations at three different depths) and analyzed for PAHs, PCBs, TPH-g, TPH-d, TPH-mo, and metals. The tables from the report showing the barge channel dredge material sampling results are included as Appendix B.

URS compared the metals concentrations in the dredge material to the following assessment criteria: *Draft Staff Report – Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines* (San Francisco Bay RWQCB 2000) (2000 Draft Guidelines). All of the PCB, PAH, and metals concentrations were lower than the 2000 Draft Guidelines for wetland foundation and surface material with the exception of cadmium, which was slightly higher than the 2000 Draft Guidelines for wetland surface material. The wetland surface material criterion for cadmium is 0.33 mg/kg, and the barge channel dredge material sample results ranged from 0.46 to 0.60 mg/kg. Since the cadmium concentrations are only slightly higher than the wetland surface material criterion and are significantly lower than the wetland foundation material criterion for cadmium (9.6 mg/kg), and all of the other metals, PCB, and PAH concentrations are lower than the 2000 Draft Guidelines for wetland foundation and surface material, the barge channel dredge material is considered suitable for reuse as wetland surface material.

6. County of Napa – Board of Supervisors (County) Comments on the Draft EIR

DFG Responses to County Comments on the Draft EIR

6. County

County -1: Statement regarding opportunity to comment and support for wetland restoration along the Napa River

Response: This comment is a statement regarding appreciating the opportunity to comment and in general supporting wetland habitat restoration and enhanced public access along the Napa River. No response is necessary.

County -2: Concerns about bird strike hazards – need more thorough analysis of No Project Alternative to understand the differences between the alternatives – managed pond within 10,000 feet of airport inconsistent with FAA

Response: Please see Master Response 1.

County -3: Impact drainage of airport lands

Response: Please see Master Response 5.

County -4: Draft EIR did not address County's request for improving access over Fagan Creek

Response: Please see Master Response 3.

County -5: Need to submit plan to County ALUC

Response: Please see Master Response 2.

County -6: Request that include extension of proposed trail north or railroad tracks to Fagan Marsh

Response: Please see Master Response 3.

County -7: Request that use of Napa County Flood Control and Water Conservation District dredged material be given preferential use as part of mitigation for potential flooding impacts

Response: The proposed project has the potential to utilize dredged material during construction. The ability of the project to accept dredged material will depend on the timing of its availability. If Napa River dredging coincides with construction of the North and Central Units in 2007 or the South Unit anticipated in 2010 to 2012, dredged material may be used for construction. The Napa County Flood Control and Water Conservation District would be responsible for obtaining water quality permits for placement of the dredged material on the proposed project site, including any associated water management discharge.

County -8: Who would be NEPA lead agency

Response: Implementation of the proposed project or alternatives would require a permit from the Army Corps of Engineers under Section 404 of the Clean Water Act. As such, the Army

Corps of Engineers would be required to comply with the National Environmental Policy Act and would be the NEPA lead agency.

County -9: Funding for maintenance and management

Response: Please see Master Response 6.

2.3. ORGANIZATIONS AND INDIVIDUALS COMMENTS AND RESPONSES

1. California Pilots Association Comments on the Draft EIR

DFG Responses to California Pilots Association Comments on the Draft EIR

1. California Pilots Association (Association)

Association-1: Introductory statement about the California Pilots Association

Response: The comment is a statement identifying the California Pilots Association and conveying their view that the proposed project would cause harm to airport operations. No response is necessary.

Association-2: Very concerned about safety issues – bird strike hazards

Response: Please see Master Response 1.

Association-3: Liability associated with the project

DFG does not believe the project will result in increased liability for aircraft bird strikes because of the various mitigation and design measures that are proposed. Project related mitigation and design measures that will reduce the potential for aircraft bird strikes include, but are not limited to, raising the bottom elevation of Pond 10, creating upland areas that will allow for the extension of the RSA, constructing tidal channels and omitting the managed pond from the restoration project. Raising the bottom elevation of Pond 10 will accelerate the establishment of vegetation on the project site. Birds associated with vegetated marsh have lower relative hazard scores than those associated with open water habitat. Creating upland for the RSA will reduce the amount of habitat available for birds. Constructing tidal channels will improve tidal circulation, allowing the ponds to flood and drain on a diurnal basis, thereby limiting the duration when the ponds will provide suitable habitat for waterfowl. Omitting the managed pond will also reduce the area of habitat suitable for waterfowl. Finally, it is important to reiterate that in the absence of the proposed mitigation and design measures the ponds adjacent to the airport would be capable of supporting abundant waterfowl populations in perpetuity, thus over time the potential for aircraft bird strikes would likely be more significant than if the project was not implemented.

2. IASCO
Comments on the Draft EIR

DFG Responses to IASCO Comments on the Draft EIR

2. IASCO

IASCO-1: Introductory statement regarding nature of IASCO

Response: The comment is a statement identifying IASCO and explaining that they are the largest tenant at the Napa County Airport. No response is necessary.

IASCO-2: Bird strike hazards

Response: Please see Master Response 1.

IASCO-3: Flooding impacts

Response: Please see Master Response 5.

IASCO-4: Airport security / public access

Response: Please see Master Response 4.

IASCO-5: Concern regarding potential significant economic loss to community and endangerment of lives in and around the airport airspace. Request project be put on hold until safety, security, and flooding issues are thoroughly reviewed.

Response: There is no evidence to indicate that the proposed project would cause a significant economic loss to the community. There is no demonstrated basis for this concern. Also, see Master Response 1 for a discussion of bird strike hazards associated with the proposed project.

Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. At these meetings the issues regarding applicable plans and policies were discussed. The DFG elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and to public safety in the form of bird strike hazard potential. DFG met with the County of Napa in August 2006 to discuss flooding issues at the Airport and the condition of the existing 48-inch gated culvert. In an effort to improve flooding conditions along No Name Creek adjacent to the Airport, an agreement was made for both parties to contribute time and resources during this project development to address the issues. The County agreed to fund design and maintain a new drainage control structure to replace the existing 48-inch culvert and gate. CDFG agreed to include (fund) the proposed drainage control structure in the design bid package for Pond 9 & 10 construction, as long as the design was completed by the County prior to final plan development in December 2006.

3. San Francisco Bay Trail
Comments on the Draft EIR

DFG Responses to San Francisco Bay Trail Comments on the Draft EIR

3. San Francisco Bay Trail (Bay Trail)

Bay Trail-1: General statement regarding what they would like to see addressed – trail connections

Response: Please see Master Response 3.

Bay Trail-2: Wetlands Edge Bay Trail

Response: Please see Master Response 3.

Bay Trail-3: Trail Access on North Unit Levee

Response: Please see Master Response 3.

Bay Trail-4: How to connect from proposed Bay Trail alignment on Green Island Road to the NPSR project's proposed trail paralleling Green Island Road

Response: Please see Master Response 3.

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4. Barry Christian
Comments on the Draft EIR

DFG Responses to Barry Christian Comments on the Draft EIR

4. Barry Christian

Christian-1: Thanks for opportunity to comment

Response: The comment is a statement expressing gratitude for the chance to comment and the manner in which the public hearings have been conducted. No response is necessary.

Christian-2: Trails

Response: Please see Master Response 3.

Christian-3: Overnight Campground

Response: Please see Master Response 3.

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5. James W. Ford
Comments on the Draft EIR

DFG Responses to James W. Ford
Comments on the Draft EIR

5. James W. Ford

Ford-1: Concerned about project

Response: The comment is a statement expressing concern about the proposal to restore wetlands in close proximity to the airport. No response is necessary.

Ford-2: Concerns about breaching levees and increased risk of flooding

Response: Please see Master Response 5.

Ford-3: Airport security

Response: Please see Master Response 4.

Ford-4: Bird strike hazard

Response: Please see Master Response 1.

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6. Tom McGee
Comments on the Draft EIR

DFG Responses to Tom McGee Comments on the Draft EIR

6. Tom McGee

McGee-1: Introductory statement

Response: The comment is a statement that the commenter is a tenant and regular user of the Napa County Airport with 43 years of military and commercial flying experience. No response is necessary.

McGee-2: Plan is alarming regarding restoring bird habitat

Response: Please see Master Response 1.

McGee-3: Flooding problems

Response: Please see Master Response 5.

McGee-4: Security problems

Response: Please see Master Response 4.

McGee-5: Bird strike hazards

Response: Please see Master Response 1.

7. Harold D. Morrison
Comments on the Draft EIR

DFG Responses to Harold D. Morrison Comments on the Draft EIR

7. Harold D. Morrison

Morrison-1: Concerns about project

Response: The comment is a statement expressing concern about the proposal to restore wetlands in close proximity to the airport. No response is necessary.

Morrison-2: Bird strike hazards

Response: Please see Master Response 1.

Morrison-3: Flooding

Response: Please see Master Response 5.

Morrison-4: Security

Response: Please see Master Response 4.

Morrison-5: Request project be put on hold until safety, security, and flooding issues are thoroughly reviewed.

Response: Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. At these meetings the issues regarding applicable plans and policies were discussed. The DFG elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and to public safety in the form of bird strike hazard potential. DFG met with the County of Napa in August 2006 to discuss flooding issues at the Airport and the condition of the existing 48-inch gated culvert. In an effort to improve flooding conditions along No Name Creek, an agreement was made for both parties to contribute time and resources during this project development to address the issues. The County agreed to design and maintain a new drainage control structure to replace the existing 48-inch culvert and gate. CDFG agreed to include (fund) the proposed drainage control structure in the design bid package for Pond 9 & 10 construction, as long as the design was completed by the County prior to final plan development in December 2006.

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8. Peter Snowden
Comments on the Draft EIR

DFG Responses to Peter Snowden Comments on the Draft EIR

8. Peter Snowden

Snowden-1: Introductory statement

Response: The comment is a statement expressing concern about the proposal to improve bird habitat adjacent to an airport. No response is necessary.

Snowden-2: Personal statement

Response: The comment is a statement that the commenter is a member of the California Bar Association and has observed that over the past 20 years government agencies have to be held more responsible for their actions. No response is necessary.

Snowden-3: Bird strike hazard

Response: Please see Master Response 1.

Snowden-4: Leave buffer around airport

Response: Please see Master Response 2.

9. Bill Wheadon
Comments on the Draft EIR

DFG Responses to Bill Wheadon Comments on the Draft EIR

9. Bill Wheadon

Wheadon-1: Removal of levees and flood hazards

Response: Please see Master Response 5.

Wheadon-2: Bird strike hazards

Response: Please see Master Response 1.

Wheadon-3: Airport security

Response: Please see Master Response 4.

Wheadon-4: Hunting

Response: Please see Master Response 3.

10. Gary and Suzanne Wooton
Comments on the Draft EIR

DFG Responses to Gary and Suzanne Wooton Comments on the Draft EIR

10. Gary and Suzanne Wooton

Wooton-1: Concerns about project

Response: The comment is a statement expressing concern with regard to the proposed project. No response is necessary.

Wooton-2: Bird strike hazards

Response: Please see Master Response 1.

Wooton-3: Airport security

Response: Please see Master Response 4.

Wooton-4: Modification of levees and flooding

Response: Please see Master Response 5.

Wooton-5: Flooding to runway instruments

Response: Please see Master Response 5.

Wooton-6: Request project be put on hold until safety, security, and flooding issues are thoroughly reviewed.

Response: Six meetings were held with the County between July 2005 and August 2006, both prior to and after the release of the Draft EIR, with the goal of identifying the best solutions to public safety concerns raised by the project. In addition to staff from multiple Napa County departments, staff from Caltrans Aeronautics, Federal Aviation Administration (FAA) and U.S. Department of Agriculture (USDA) Wildlife Services participated in many of the meetings. At these meetings the issues regarding applicable plans and policies were discussed. The DFG elected to change the preferred project alternative to Alternative 1, Full Tidal Restoration, to minimize potential impacts to water quality and to public safety in the form of bird strike hazard potential. DFG met with the County of Napa in August 2006 to discuss flooding issues at the Airport and the condition of the existing 48-inch gated culvert. In an effort to improve flooding conditions along No Name Creek, an agreement was made for both parties to contribute time and resources during this project development to address the issues. The County agreed to design and maintain a new drainage control structure to replace the existing 48-inch culvert and gate. CDFG agreed to include (fund) the proposed drainage control structure in the design bid package for Pond 9 & 10 construction, as long as the design was completed by the County prior to final plan development in December 2006.

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2.4. PUBLIC MEETING COMMMENTS AND RESPONSES

1. Public Meeting Comments on the Draft EIR

DFG Responses to Public Meeting Comments on the Draft EIR

1. Rick Thein

Public Meeting-1: Trails

Response: Please see Master Response 3.

2. Matthew Plate

Public Meeting-2: Trails

Response: Please see Master Response 3.

Chapter III
Clarifications

This chapter presents revisions that have been made to the Draft EIR. Portions of the DEIR that have been revised are highlighted in gray.

MITIGATION MEASURES

Mitigation measures that have been added, revised, or deleted are discussed below.

Biology

The following mitigation measures have been revised:

Mitigation Measure BIO-1b: Implement the following measures to reduce the risk of take (organisms and/or habitat damage) for special status species:

1. If construction must occur during nesting season (February-July), conduct pre-construction surveys for California clapper rail, black rail, salt marsh common yellowthroat, San Pablo song sparrow, western snowy plover, and western burrowing owl in appropriate on-site habitat that may be affected by construction (including buffer zones, e.g. southern portion of Fagan Marsh);
2. Avoiding work in occupied habitat during breeding/nesting periods, i.e. February-July;
3. Conducting construction worker "tail-gate" training, and;
4. Providing onsite biological monitoring during construction activities in potentially occupied special status species habitat, such as salt marsh harvest mouse habitat.

Mitigation Measure BIO-1c: An incidental take authorization may be required from USFWS and NOAA-Fisheries for impacts to special status species for construction within the waters of the U.S. Mitigation measures to minimize the potential for entrapment and adverse water quality resulting from constructing levee breaches will be developed in consultation with USFWS and NOAA-Fisheries.

Public Health and Safety

The following mitigation measure has been revised:

Mitigation Measure PHS-1a: Excavate tidal channels into the site to enhance draining, reduce areas of standing water, and thereby reduce waterfowl habitat and use of the site.

Mitigation Measure PHS-1b: Increase the surface elevation of the ponds underneath the basic flight pattern of Runways 6/24 and to hasten vegetation establishment, reducing the use of the site by flocking shorebirds and waterfowl.

Mitigation Measure PHS-1c: Implement adaptive management measures if the project results in an increase in the number of bird strikes. Adaptive management measures would include avian control techniques (e.g., habitat exclusion, repellent and harassment) identified in the FAA *Wildlife Hazard Management at Airports* publication.

Water and Sediment Quality

The following mitigation measures have been revised:

Mitigation Measure WA-SED-5: Monitor mercury in water prior to construction. Monitor fish tissue after construction to correspond with the Board's new fish tissue based water quality objective.

Mitigation Measure WA-SED-6: Monitor mercury in sediment prior to construction. Monitor fish tissue after construction to correspond with the Board's new fish tissue based water quality objective.

The following mitigation measures have been deleted from Water and Sediment Quality because they pertained only to the managed pond:

Mitigation Measure WA-SED-2: Impacts to the Napa River will be minimized by constructing the proposed project while the ponds are dry and by controlling the timing, rate, and concentration of discharges from the managed pond. The proposed project would avoid discharging water from the managed pond to the Napa River in an abrupt manner, during low flow in the Napa River, and when managed pond salinity is greater than 100 ppt. Discharge from the managed pond will be minimized during salmonid migration in the river from December 1 through April 30.

Mitigation Measure WA-SED-3: Compliance with Waste Discharge Requirements or a NPDES permit requirements that may be issued for managed pond operation.

Section 4.7 of the Draft EIR has been revised to clarify the original text and to respond to comments on this section. Please note that for consistency with the other DEIR sections the DEIR format is maintained; that is the proposed project is Tidal Restoration and Managed Pond. As noted earlier in this document, the DFG elected to change the Preferred Project alternative to Alternative 1, Full Tidal Restoration.

4.7 WATER AND SEDIMENT QUALITY

4.7.1 Sources of Information

Existing water quality conditions in the salt ponds at the site of the proposed NPSR project, the Napa River, and Fagan Slough were evaluated based on data collected at similar nearby sites, and on regional water quality data available in the literature. The Regional Setting section was taken directly from the *Napa River Salt Marsh Restoration Project. Final Environmental Impact Report* (NSMRP EIR) (CSCC and CDFG 2004). Specific sources of information include:

- 2004 Annual Self-Monitoring Report For South San Francisco Bay Low Salinity Salt Ponds (July 2004-December 2004), WDID NO. 2 019438001 (FWS 2004)
- 2004 Self-Monitoring Report-Baumberg Complex-Hayward, CA, WDID Number 2 019438001 (CDFG 2004)
- Habitat Restoration Monitoring for the Napa-Sonoma Marsh Restoration Project, October 2003 – June 2005 (Takekawa 2005)
- *Napa River Salt Marsh Restoration Project. Final Environmental Impact Report* (CSCC and CDFG 2004)
- Salinity Sampling Data (Ransom, pers. comm., 2005)
- *Site Investigation Report, Cargill Salt Napa Site and Baumberg Concentrator Ponds* (CH2M Hill 2003)
- *Site Removal Report, 2983 Green Island Road, American Canyon, California* (Treadwell and Rollo 2003)
- *Water Quality and Sediment Characterization, Napa River Salt Marsh Restoration Project* (HydroScience Engineers 2002)

The text (Sections 4.7.2.1, 4.7.2.2, 4.7.2.3, and 4.7.2.4) in the following description of regional conditions is largely from the NSMRP EIR (CSCC and CDFG 2004) although some modifications have been made.

4.7.2 Regional Setting

The hydrologic processes and fate and transport factors for chemical constituents in San Francisco Bay, its tributary rivers, and adjacent estuaries are complex and result in dynamic water quality conditions. Water quality in the Bay-Delta estuary is largely a function of the mixing of ocean water and freshwater inflows from precipitation, the Delta, and other tributary

streams. Water and sediment quality are affected by physical, chemical and biological processes. Heat, light and physical mixing of sediment, nutrients, and salts combine with primary and secondary productivity and by-products in the aquatic ecosystem of the bay. These ecosystem functions have secondary effects on dissolved oxygen, pH, and organic matter production and decay. In addition, the discharge of anthropogenic sources of conventional inorganic contaminants and trace metal and synthetic organic compounds also play a major role in the quality of bay water and sediments. Examples include treated municipal and industrial wastewater discharges and urban stormwater runoff.

4.7.2.1 Salinity (CSCC AND CDFG 2004)

Salinity in the Bay-Delta estuary reflects a balance between the saline marine influence, freshwater dilution, and the effects of evaporation. Undiluted seawater has an average salinity of about 35 ppt and distilled fresh water is defined as having 0 ppt salinity. Estuarine or brackish water represents salinity that lies between pure freshwater and pure saltwater conditions. Saltwater is considerably more dense than fresh water; therefore, fresh water floats on top of saline water. The density difference between saline and fresh water conditions also influences physical mixing between water layers of varying density. In general, salinity is lower and has a greater seasonal variation in the northern portion of San Francisco Bay than in the southern portion, because San Pablo Bay receives substantially greater freshwater influx from the Delta. The salinity in the sloughs of San Pablo Bay varies seasonally. During periods of high fluvial outflow (particularly the winter rainy season), increased freshwater influx via San Pablo Bay's creeks decreases the salinity in the sloughs. Slough salinities increase during the summer low-flow period when freshwater influx is reduced.

The USGS and San Francisco Estuary Institute Regional Monitoring Program (RMP) conduct extensive water quality monitoring activities in San Francisco Bay and its freshwater tributaries (San Francisco Estuary Institute 1999, 2000a). The USGS operates a continuous salinity meter at Point San Pablo and has operated several continuous TSS recorders (e.g., Benicia Bridge, Carquinez Bridge, Point San Pablo) in recent years. Analyses indicate that salinity in San Pablo Bay varies over a wide range during the year from nearly fresh water to nearly pure sea water. Salinity also exhibits a distinct variation that correlates with the spring-neap tidal cycle with spring tides having greater energy to force seawater further into the estuary. The spring-neap tidal cycle is generally more pronounced in the North Bay.

4.7.2.2 Suspended Sediment (CSCC AND CDFG 2004)

Like salinity, suspended sediment concentration is controlled by a balance of factors. Key influences on suspended sediment are loading from inland streams, tidal influences on dilution and mass loading of biotic suspended matter (algae, zooplankton), and resuspension of previously deposited sediments within the bay. Resuspension of sediments within the bay is a function of tidal currents, wind strength and direction (i.e., the strength of wind-driven wave currents), and freshwater inputs. Freshwater influx peaks during the winter (November–April) rainy season and land-derived sediment loading shows a corresponding winter peak. Tidal currents vary as a result of monthly neap and spring tidal cycles, with the greatest sediment mobility during spring tides.

In general, TSS concentrations are highest in the San Pablo Bay region and at the southern end of San Francisco Bay. TSS concentrations are typically lower in central San Francisco Bay. USGS

data show average concentrations of ~80–150 milligrams per liter (mg/l) in San Pablo Bay (Northwest Hydraulic Consultants 2001). High TSS concentrations in San Pablo Bay are generally associated with sediment input associated with Delta inflows.

Measured TSS concentrations range from relatively low values of less than 50 mg/l TSS to very turbid conditions exceeding 1,000 mg/l TSS. Seasonal RMP grab samples also indicate that TSS concentrations are generally elevated in the Napa and Petaluma Rivers compared to San Pablo Bay (San Francisco Estuary Institute 2000a). However, the total sediment transport from the upper watersheds is minimal compared to the quantities of sediment derived from Delta outflow and wind- and wave-driven resuspension of bay sediments. In addition, Warner (2000) identified a complex tidally and salinity driven mechanism that acts to increase TSS transport into Mare Island Strait and the lower Napa River from the Carquinez Strait. Essentially, the earlier timing of flood tides with high TSS levels into Mare Island Strait compared to the Carquinez Strait provides high TSS conditions, and the convergence with lower salinity Napa River outflow creates a standing wave that allows elevated deposition rates.

4.7.2.3 Priority Trace Metal and Organic Compounds in Water and Sediment (CSCC and CDFG 2004)

Water

Water and sediment contamination from priority trace metal and synthetic organic compounds in the San Francisco Bay area largely reflects the influence of past and present agricultural and mining activities, industrial uses, and urban development (San Francisco Estuary Institute 1999). Contaminants known to be present in waters and sediments of the Bay-Delta estuary include heavy metals (lead, copper, aluminum, mercury, nickel, vanadium, chromium, silver, zinc), PAHs, PCBs, chlorinated hydrocarbon pesticides, and tributyltin (San Francisco Estuary Institute 1999, 2000a, San Francisco Bay RWQCB 1998).

Within the North Bay region, constituents of concern that routinely exceed numeric guidance levels, human health guidelines, and/or regulatory concentration criteria in water samples collected for the RMP monitoring program include copper, mercury, and PCBs (San Francisco Estuary Institute 2000a). For the Napa River and San Pablo Bay samples, only copper exceeded applicable criteria on an average basis; however, individual measurements of mercury, copper, nickel, chromium, lead, and zinc exceeded criteria on one or more occasions (San Francisco Estuary Institute 1999). Organic compound concentrations of PCBs and dichlorodiphenyldichloroethelene (DDE) were also measured above water quality guidelines at least once in the Napa River and San Pablo Bay. The sum of 40 PCB congeners was well above the congener-based total-PCB criterion of 170 picograms per liter (pg/l) in all but eight of the RMP sampling locations. While the concentrations of PCBs have dropped since the 1970s, the RMP monitoring data have shown no clear trends in recent years. Measured exceedances of metals and organic compounds occurred less frequently in other North Bay sampling locations (i.e., Davis Point, Pinole Point).

The sources and magnitude of contaminant loading to San Francisco Bay have been recently characterized as consisting primarily of the following categories: Central Valley via Delta inflows, local runoff of rivers and stormwater runoff, point-source discharges to the bay from municipal and industrial facilities, atmospheric deposition, and dredged material disposal (San

Francisco Estuary Institute 2000b). Overall, the report indicated that TSS and contaminant influxes from the Delta comprise a large majority of the total loading in San Francisco Bay. Atmospheric deposition and dredged material disposal represent relatively small contributions.

The relative magnitude of contaminant loading from local watershed sources and point-source discharges depends on the particular chemical constituent in question. For example, point-source discharges comprise the majority of inorganic nutrient (nitrogen [N] and phosphorus [P]) loading to San Francisco Bay, whereas trace metals inputs are primarily associated with local watershed sources. Relative source contributions of organic compounds have not been determined. Within the category of local watershed runoff, the Napa River, Petaluma River, and Sonoma Creek watersheds were found to contribute a relatively high percentage of the total San Francisco Bay area load of selected trace metals (cadmium, chromium, copper, lead, nickel, and zinc) compared to other watersheds.

Sediment

RMP monitoring data for 1993–1999 average sediment constituent concentrations in the Napa River and San Pablo Bay indicate that both water bodies exceed one or more guidance criteria for arsenic, chromium, copper, mercury, nickel, and total dichlorodiphenyltrichloroethane isomers (DDTs) (San Francisco Estuary Institute 1999, 2000a). RMP data for the Napa River indicate that mercury, PCBs, total DDTs, arsenic, copper, and chromium exceeded sediment guidelines in more than 90% of the samples collected from 1993 to 1999 (San Francisco Estuary Institute 2000a). San Pablo Bay sediment also exceeds criteria for total PAHs. The former Mare Island Naval Shipyard is also a potential point source of TBT, a highly toxic endocrine-disrupting chemical used as an antifoulant in ship paints. Sediment toxicity tests have also frequently been positive for Napa River samples; Davis Point samples have tested positive for sediment toxicity much less frequently.

Mercury Dynamics in an Estuary

Mercury contamination is widespread in sediments and waters of the San Francisco Bay area (San Francisco Estuary Institute 2000a, San Francisco Bay RWQCB 2000). Mercury is a constituent of particular concern to wetland restoration projects because of its ability to convert to the methylated form of the metal, which is relatively more mobile in the aquatic environment than other forms. As explained in more detail below, the sulfate reducing bacteria typically associated with marsh sediments methylate mercury as part of their respiration process, making it more bioavailable to aquatic life. Therefore, upland sediments containing sediment- bound mercury can become a source of methyl mercury when exposed to tidal action.

Long-term RMP monitoring data for total mercury in water and sediment has consistently shown elevated concentrations, primarily in the North and South Bay areas and river tributaries. There is also a strong correlation between total mercury and suspended sediment transport in the water [San Francisco Estuary Institute 2002]. Elevated mercury levels are in large part a legacy of the California gold mining era, when mercury was used in the gold refining process. Mines such as south San Francisco Bay's New Almaden Mine are known to be a source of mercury in the South Bay. Mercury can be delivered to the San Pablo Bay system via the Delta.

In aquatic environments, most mercury is chemically bound to suspended particles of soil or sediment; a smaller fraction is bound to dissolved organic carbon. Sediment-bound mercury may

be available to aquatic organisms and is thus a pollutant of concern; the potential for adverse environmental effects from sediment-bound mercury depends primarily on transport and depositional characteristics (e.g., particle size) and on the physical and chemical properties of the sediment.

Additionally, sediment-bound mercury may be converted through both biotic and abiotic processes to its more bioavailable methylated form. Factors conducive to methylation of mercury include low-flow or stagnant waters, hypoxic or anoxic conditions in the water or sediment column, low pH (pH<6), and high concentrations of dissolved carbon. Most of these factors are in turn affected by biological processes such as metabolism, growth, and decay; for example, mercury methylation has been linked to the activity of sulfate-reducing bacteria in the shallow anoxic sediment column.

Aquatic plants, fish, and wildlife readily adsorb methyl mercury. It can then accumulate in their tissues, creating contaminated food sources (plant or animal tissues) that transfer through the food web (Santa Clara Valley Water District and U.S. Army Corps of Engineers 2001). It is a mutagen, teratogen, and carcinogen, and has embryotoxicological, cytochemical, and histopathological effects. In aquatic organisms, concentrations of 0.1–200 µg/l have been shown to produce adverse effects; chronic toxicity has been shown to increase with the age of the organism, exposure time, temperature, lowered salinities, and the presence of other metals. Acute toxicity to embryonic development is associated with methyl mercury.

Development of Total Maximum Daily Loads and Revised Water Quality Objectives

Several total maximum daily loads (TMDLs) are in development for the Napa River and San Francisco Bay. The Board is in the process of reviewing and adopting Basin Plan amendments to formally establish the TMDLs. The Napa River TMDL projects include nutrients, pathogens, and sediment. San Francisco Bay projects include establishing TMDLs for mercury and PCBs.
On August 9, 2006, the RWQCB adopted a Basin Plan amendment including a revised TMDL for mercury in San Francisco Bay, two new water quality objectives, and an implementation plan to achieve the TMDL. Approval by the State Water Resources Control Board is pending with a hearing date to be announced. The two new water quality objectives replace the former 4-day average water quality objective for total mercury concentration in the San Francisco Bay. The former value was 0.025 µg/L. The one-hour average value of 2.1 µg/L of total mercury still applies. The new water quality objectives are shown in Table 4.7-1. These two new objectives replace the water column four-day average marine mercury objective, which will no longer apply to the San Francisco Bay waters. The objectives do not specifically apply to the Napa River but do apply to San Pablo Bay. Chapter 6 of the Amended Basin Plan describes the compliance monitoring to meet the San Francisco Bay mercury human health objective. The Basin Plan states, "Compliance with the human health marine water quality objective for mercury in San Francisco Bay will be evaluated in fish at the lengths shown below. The mercury concentration in the edible portion of these five species will be averaged and compared to the human health water quality objective." The five species are listed below in Table 4.7-2.

Table 4.7-1
Marine[a] Water Quality Objectives for Mercury in San Francisco Bay[b]

Protection of Human Health	0.2 mg mercury per kg fish tissue	Average wet weight concentration measured in the edible portion of trophic level 3 and trophic level 4 fish[c]
Protection of Aquatic Organisms and Wildlife	0.03 mg mercury per kg fish	Average wet weight concentration measured in whole fish 3-5 cm in length

Notes:

[a] Marine waters are those in which the salinity is equal to or greater than 10 parts per thousand 95% of the time, as set forth in Chapter 4 of the Basin Plan. For waters in which the salinity is between 1 and 10 ppt, the applicable objectives are the more stringent of the freshwater or marine objectives.

[b] Objectives apply to all segments of San Francisco Bay, including Sacramento/San Joaquin River Delta (within San Francisco Bay region), Suisun Bay, Carquinez Strait, San Pablo Bay, Richardson Bay, Central San Francisco Bay, Lower San Francisco Bay, and South San Francisco Bay (including the Lower South Bay).

[c] Compliance shall be determined by analysis of fish tissue as described in Chapter 6 of the Basin Plan, Surveillance and Monitoring.

Table 4.7-2
Five most Commonly Consumed Bay Fish (Basin Plan Table 6-4)

Species and Edible Portion	Evaluation Length (cm)
Striped bass, muscle without skin	60
California halibut, muscle without skin	75
Jacksmelt, muscle with skin and skeleton	25
White sturgeon, muscle without skin	135
White croaker, muscle with skin	25

At this time, there is no aquatic methyl-mercury water quality objective for the San Francisco Bay Region. The Central Valley Regional Water Quality Control Board is proposing aqueous methyl-mercury goals, however, these goals are site specific and would not apply to the Napa River.

Biosentinel Monitoring

Since the amended Basin Plan has modified the mercury water quality objective from a direct water quality measurement to a fish tissue based objective, it is relevant to look at mercury concentrations in fish tissue. While no data are available at this time for the five most commonly consumed Bay fish in the vicinity of the Napa Plant Site, the Department of Environmental Science and Policy at the University of California, Davis is conducting a mercury monitoring program as part of the California Bay Delta Authority (CBDA) Fish Monitoring Program. Darell Slotton, et al have published their first year draft data report covering sampling conducted from August 2005 to February 2006. The monitoring program has several sampling sites throughout the San Francisco Bay Area and nine of the sampling locations are in the Napa River. The sampling locations of interest to the Napa Sonoma Marshes' sites are summarized in Table 4.7-3 below.

Table 4.7-3
Biosentinel Mercury Monitoring Napa River Sample Locations

Site Code	Site Names, Descriptions	GPS Site Coordinates		Sample Date
		(North)	(West)	
NAPNAP	Napa River at Napa	38° 17.407'	122° 16.905'	10/17/05
NAP29	Napa River Hwy 29 Wetlands	38° 15.126'	122° 17.647'	10/12/05
NAPGLP	Napa R. at Good Luck Point	38° 11.049'	122° 18.230'	10/12/05
NAPAMC	American Canyon Wetlands	38° 10.218'	122° 16.515'	10/17/05
NAPP2A	Napa Marsh Pond 2A	38° 09.273'	122° 19.371'	10/14/05
NAPP3	Napa Marsh Pond 3	38° 08.197'	122° 17.062'	10/14/05
NAPCHSL	Napa Marsh mid China Slough	38° 10.026'	122° 18.737'	10/17/05
NAP37	Napa River at Hwy 37	38° 06.738'	122° 16.712'	10/17/05
NAPSLW	Napa Slough West	38° 09.595'	122° 22.724'	10/14/05
SPBIND	San Pablo Bay Index	38° 07.722'	122° 21.469'	10/12/05

At each sample location a small fish species, inland silversides (*Menidia beryllina*), were collected and analyzed for mercury. Slotton, et al summarized the Napa Sonoma Marshes region results as follows:

"Napa Marsh is a region undergoing a tremendous amount of large wetland restoration activity and was recommended as a priority region for the mercury biosentinel monitoring. The region includes tidal mudflat restoration and numerous former salt ponds that are being restored to wildlife habitat. Based upon site visits, discussions with agency personnel, and our reconnaissance of the system, we conducted first year fall monitoring at a range of sites encompassing representative habitats and geographic distributions. These include a formerly breached pond that had almost entirely revegetated (Pond 2A) and another that had been vandal breached more recently and had little or no revegetation (Pond 3). They included the CBDA American Canyon tidal wetland restoration zone on the east side of the Napa River and a tidal mudflat restoration upstream toward Napa. They included sites deep within the region of the other west side salt ponds being planned for breaching and restoration, as well as sites distributed along the Napa River above, below and adjacent to the main restoration zones, plus Napa Slough linking the western portion of the marsh to San Pablo Bay.

We expected to find potentially dramatic variability, as well as some elevated concentrations, across the system. Instead, the Napa Marsh fall silverside special data were most notable for their relative monotony. They were also notable in that the concentrations from within the marsh and restoration region (45±5 to 55±4 ng/g) were generally lower than those from both upstream (Napa River at Napa, 62±6 ng/g) and the adjacent downstream San Pablo Bay Index (66±6 ng/g). Most of the marsh region sites were statistically lower than these bookend sites. Among the main marsh region sites, several were statistically (just) lower than some others, including the site below Hwy 29 mudflat wetlands (44±5 ng/g), downstream Napa River sites at Good Luck

Point[8] (46±2 ng/g) and Hwy 37 (45±5 ng/g), and, curiously, the site within the heavily revegetated Pond 2A (46±3 ng/g). These sites were statistically somewhat lower than the mid China Slough location (54±4 ng/g) and Napa Slough West (55±4 ng/g)."

Slotton et al. also suspect that there could be seasonal variations in methyl mercury exposures and therefore have extended seasonal collections at some sites (American Canyon Wetlands and Napa Marsh mid China Slough in the Napa Marsh area). Slotton et al. described the seasonal data for the Napa Marsh as follows:

> "The Napa Marsh seasonal data are curious and may represent a mixture of trends seen at the other sites. During much of the year, flows from the Napa River are low and water movements in the lower river and marsh are tidally dominated. However, with the large rainfall and flooding of this winter, large flows came down the Napa River, which could have easily displaced and transported some fish from some areas to others. The data suggest that this may have been the case. At the American Canyon wetlands, silverside mercury in February remained statistically identical to earlier conditions in October (54±4 ng/g) and similarly tight, while the February silversides jumped 181% to 152±26 ng/g. The individual data indicate that the elevated February mean was a function of two fairly distinct populations of fish. Both were significantly elevated over the October levels, with one group clustering in the 70-120 ng/g range and the other much higher, clustering in the 200-300 ng/g range. Clearly, regions of seasonally, variably elevated methylmercury exposure were present somewhere in the Napa Marsh or upstream. Additional data should help to clarify the situation."

Figure 3 of the Slotton report (see Attachment A) shows a graphic summary of data across all sites for inland silverside mercury concentrations. All locations (except one at Marsh Creek at Big Break) show mean concentrations higher than the amended water quality objective of 0.03 ppm (30 ng/g) in prey fish.

4.7.2.4 Treatment Plant Discharge (CSCC AND CDFG 2004)

Wastewater treatment plants (WWTPs) are monitored as point sources of pollution, and most plants in the North Bay region are converting to tertiary treatment to meet increasingly stringent discharge permit requirements. The WWTPs in the North Bay region discharge recycled water to area waterways only during the wet season. The Napa Sanitation District (NSD) WWTP discharges to the Napa River 2.7 miles upstream from the proposed project area and the City of American Canyon WWTP discharges into the North Slough and adjacent constructed wetlands.

In general, the WWTPs produce effluent that has moderate inorganic mineral content with low suspended solids and turbidity relative to the natural background conditions in the Napa River and San Pablo Bay. The pH values are neutral, and along with ammonia and whole effluent toxicity test data, the effluent usually is in compliance with regulatory permit limits.

High analytical detection limits used for some of the trace metals preclude comparisons with applicable Basin Plan water quality objectives. However, NSD effluent discharge generally

[8] This station is nearest to the NPS where the South Unit will be breached.

contains low concentrations of copper and mercury, which are listed on the 303(d) list as substances responsible for the impairment of San Pablo Bay. These substances are considered in the NPDES permits issued by the San Francisco Bay RWQCB, although the allowable discharge levels could change when the Total Maximum Daily Load evaluation process is complete.

4.7.2.5 Napa River

The Napa River drains a 426-square-mile watershed located northeast of San Pablo Bay. The water quality of the Napa River was assessed as part of the NSMRP. A sampling program was implemented in October-November 2001. Samples were collected from the Napa River near the State Highway 37 crossing, from Napa Slough approximately 1 mile from its confluence with the Napa River, and from San Pablo Bay near the mouth of the Napa River. The results of analyses for general water quality parameters are shown in Table 4.7-4. The data present an indication of the water quality in three areas; however, these parameters may exhibit significant spatial and temporal variability. Table 4.7-4 also shows the results of the SFEI RMP water sampling in San Pablo Bay in August 2003.

4.7.2.6 Fagan Slough

Fagan Slough is tributary to the Napa River approximately 300 feet north of the proposed project site. Sampling data are not available for Fagan Slough; however, water quality data for Napa Slough, provided above, are likely to provide a general understanding of the existing condition in Fagan Slough. Nonpoint source flows from the Fagan Creek watershed may affect water and sediment quality in Fagan Slough. Land uses in the drainage area include Fagan Marsh, Napa County Airport, and agriculture.

4.7.2.7 Salt Ponds

Pond Water Quality: Regional salt pond water quality data are useful for anticipating water quality characteristics likely to be found in the ponds of the proposed NPSR project. At the NSMRP site across the river, the most highly concentrated ponds, in terms of salinity, have historically been Ponds 7, 7A, and 8. Water was moved from Pond 8 to the pickle ponds in the proposed project site. Pond 4 preceded Ponds 7, 7A, and 8 in the concentration process and consequently had lower salinity. Pond 7 served as bittern storage (i.e., discharge from crystallizers at the plant site) and had very high salinity.

Table 4.7-4
Regional Water Chemistry Data

	2001 NSMRP Data[1]			2003 RMP Data[2]
Parameter	**San Pablo Bay**	**Napa River**	**Napa Slough**	**San Pablo Bay**
Total Ammonia as N (mg/L)	0.3	0.3	0.5	0.05 - 0.1[3]
Un-ionized Ammonia as N (mg/L)[4]	0.004	0.005	0.011	NC
Nitrate as N (mg/L)	0.2	0.3	0.4	0.07 – 0.36[5]
Organic N (mg/L)	0.7	20.2	2.4	NM
Total Phosphorous (mg/L)	0.7	NM	ND	0.1[6]
pH	7.7	7.7	7.8	7.9 – 8.2
Biochemical Oxygen Demand (mg/L)	NM	NM	68	NM
Turbidity (NTU)	7.8	20.1	8.1	NM
Total Suspended Solids (mg/L)	26	72	20	9.6 – 122.2
Total Dissolved Solids (ppt)	24	20	20	NM
Chloride (ppt)	14	11	12	NM
Dissolved Oxygen (mg/L)[7]	8.1	8.0	7.2	6.84 – 7.08
Temperature (ºF)[7]	62	62	60	68.7 – 70.5
Fecal Coliform (MPN/100mL)	50	500	50	NM

Notes:
ND = Not detected NM = Not measured NC = Not calculated
1 All data are from laboratory analysis of single grab samples unless otherwise noted
2 Range of concentrations from four samples collected by SFEI in San Pablo Bay in 2003 as part of the RMP
3 Reported as dissolved ammonia in the water column
4 The un-ionized fraction of ammonia N was calculated using a relationship developed by Emerson et al. (1975).
5 Reported as nitrate in the dissolved water column
6 Reported as phosphate in the dissolved water column
7 Field measurement.

Table 4.7-5 shows results of water quality analyses for samples collected October 1 and 2, 2003, by HydroScience Engineers from Ponds 4, 7, 7A, and 8 at the NSMRP site. The methods used by the analytical laboratory were adapted from standard methods to reduce interference caused by high salinity in the samples. The table compares salt pond water metals concentrations with U.S. Environmental Protection Agency (EPA) and Bay Area water quality standards. Copper, nickel and zinc were found to be in excess of water quality criteria in some ponds. Copper and nickel also exceeded criteria in Napa Slough, indicating a regional water quality issue.[9] These exceedances are not thought to constitute a water quality problem for biota because the metals are complexed with organic compounds in the local waterways. Pond 7 has concentrations that exceed water quality criteria and would have the potential to cause toxicity depending on the discharge rate and mixing characteristics in the river. The desalination plan for Pond 7 has addressed this issue by requiring extensive dilution prior to discharge to Napa Slough.

Pond Discharge Salinity: Extensive 1-dimensional modeling of a simulated breach of the levee of Pond 4 on the west side of the Napa River was performed during the planning stages of the NSMRP (PWA et al. 2002). The depth-averaged model assumed an initial salinity of 100 ppt in Pond 4, an abrupt discharge to the Napa River through a 50-foot levee breach, high water level in

[9] The San Francisco RWQCB is proposing new site-specific criteria for copper and nickel for the North Bay that accounts for lower toxicity in these waters due to complexation with organic compounds.

Table 4.7-5
Total Recoverable Metals in Water Samples Collected from the NSMRP Site[1]

Constituent		Water Quality Criterion[2]	NSMRP Permit Limit[3]	Napa Slough	Pond 4	Pond 7	Pond 7A	Pond 8
Salinity	g/L	~	50[4]	18.6	37.5	396	47.8	21.4
Arsenic	µg/L	36[5]	No limit	1.74	2.53	9.62	3.75	0.81
Cadmium	µg/L	0.76[6]	No limit	0.099	0.038	< 0.020[7]	0.037	0.041
Chromium[8]	µg/L	270[6]	No limit	< 0.40	< 0.40	50.3	48.4	23.9
Copper	µg/L	3.2[9]	No limit	4.14	1.51	4.34	0.79	1.34
Lead	µg/L	19[6]	No limit	0.67	1.05	2.81	< 0.20	0.31
Mercury	µg/L	0.025[10]	No limit	0.00575	0.00626	0.0183	0.00422	0.00262
Nickel	µg/L	7.1[5]	No limit	6.17	8.7	90	7.80	4.40
Selenium	µg/L	5.0[6]	No limit	0.144	0.160	1.22	0.175	0.090
Silver	µg/L	1.2[10]	No limit	< 0.40	< 0.40	< 0.40	< 0.40	< 0.40
Zinc	µg/L	58[5]	No limit	4.21	2.82	560	3.51	2.31

Notes:
1 Analyses performed by Frontier Geosciences, Seattle, Washington
2 Water Quality Criteria are expressed as total recoverable metals, using default EPA translators.
3 Effluent Limitations are taken from Order No. R2-2004-0063, Waste Discharge Requirements Water Quality Certification for Napa River Salt Marsh-Lower Ponds Restoration Project
4 Salinity is only constituent with effluent limitation. Limit is 50 g/L for monthly average and 100 g/L for daily maximum.
5 Basin Plan Criteria for chronic effects in salt water
6 California Toxics Rule, fresh water
7 For ND analytical results, the value shown as "less than" is Frontier's laboratory reporting limit.
8 Analytical results for chromium are expressed as the dissolved fraction. The dissolved chromium WQC for Chromium III is 270 µg/L, as set forth in the California Toxics Rule, freshwater, continuous.
9 California Toxics Rule, salt water
10 Basin Plan Criteria for chronic effects in fresh water

the pond, and high volume of flow in the Napa River. The pond discharge modeled was significantly greater than any likely discharge from the proposed project's managed pond.

The model results indicated a depth-averaged increase in the Napa River salinity of about 20 ppt in the breach vicinity, and an increase of 10 to 12 ppt over a 2-km reach. After approximately 1 week, impacts were expected to decrease to approximately 5 to 10 ppt, but cover a 6-km reach of the Napa River. River salinity in the model returned to pre-breach conditions after approximately 1 month.

The assumption of depth averaging is important in interpreting these results, because density differences between the pond discharge and receiving waters would be expected to lead to greater salinity increases near the river bottom (compared to the depth-averaged model discussed above), and smaller salinity increases near the river surface. The reduced salinity impacts in the near-surface zone would provide connectivity between low-salinity waters and be more protective of fish.

It is also important to remember that, during the dry season, the salinity of the Napa River is approximately 15 to 20 ppt, and during the wet season, the salinity of the Napa River decreases to approximately 0 to 1 ppt. The model suggests that a discharge of high (approximately 100 ppt) salinity water from the ponds during the wet season would result in the salinity of 2 km to 6 km sections of the Napa River to levels similar to those found during the dry-season for a period of a

few weeks. The modeling also showed that a lower salinity zone develops quickly inside the pond around the breach. Thus, higher salinities in the pond are "pre-mixed" prior to discharge. It is expected that this phenomenon would also occur at the project site (if the NPSR project breach construction is done while ponds are inundated), if pond salinities exceed ambient Napa River salinities by a measurable amount.

4.7.3 Project Setting

4.7.3.1 Salt Pond Water Quality

A comprehensive, site-specific program of surface-water sampling has not been conducted at the proposed project site, because the site is still managed by Cargill as described in the Phase-out Operations description in Section 2. Water quality in the ponds changes significantly through the year when salt production is ongoing. Cargill measures salinity in the ponds routinely. Historically, the salinity of the water in the pickle ponds (Ponds 9, 10, Unit 3, B-1, B-2, and B-3) has varied through an annual cycle, reaching a high in the late summer and a low in the late winter. Cargill has been working on reducing the salinity in these ponds as part of the phase-out operations. Figure 4-1 illustrates salinity trends in the six pickle ponds over the period between March 2003 and April 2005. The data over this period suggest a pattern of generally decreasing salinity in the pickle ponds.

4.7.3.2 Salt Pond Sediment Quality

At the request of Cargill, Phase One Environmental Site Assessment work was conducted at the site in 2000 and 2002, to investigate past and existing conditions at the site, and determine whether any known or observable condition would indicate that a recognized environmental condition might exist. A recognized environmental condition could include releases of hazardous materials, petroleum, or hazardous waste from such sources as leaking underground storage tanks. A Phase Two Site Investigation characterized all areas of the proposed project site, including upland areas as well as the ponds (CH2M Hill 2003). As part of the Phase Two Site Investigation soil samples were collected in September–October 2002 at locations shown on Figure 4-4. Additional water and sediment samples were collected at the proposed project site on May 4, 2006. One sample was collected in each pond, two samples were collected in Fagan Slough, and one sample was collected in the Napa River south of Brazos Bridge. The water and sediment samples are being analyzed for metals including mercury. These data are not yet available but will be included and discussed in the RWQCB permit application, if possible.

All analytical results for soil samples collected from the ponds were compared to the following assessment criteria described in: Draft Staff Report – Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines (San Francisco Bay RWQCB 2000) (2000 Draft Guidelines).

Pond sediment metal concentrations are influenced by local geological conditions and variability as well as salt making processes. Tables 4.7-6a and 4.7-6b summarize the results of soil sampling for the ponds. Metals for which the San Francisco RWQCB established Draft Guidelines in 2000 are presented in Table 4.7-6a. No metals were detected at concentrations exceeding the

Figure 4-1

Figure 4-4

Table 4.7-6a
Results of Pond Soil Analyses and Sediment Screening Criteria

METALS (mg/kg dry weight)[1]	2000 Draft Guidelines		WP-1	WP-1 dup	WP-2	WP-3	PP-1 [6]	PP-2 [6]	PP-3 [6]	CB-1 [6]	CB-2 [6]	CB-3 [6]	CB-4 [6]	CB-5 [6]	CB-6 [6]	CB-7 [6]
	Wetland Foundation Material[2]	Wetland Surface Material[3]														
Arsenic (As)	70	15.3	9.2	6.8	6.1	6.3	6.8	6.1	9.3	3.9	3.2	5.8	5.9	9.0	3.8	8.7
Cadmium (Cd)	9.6	0.33	0.34	0.39	0.34	0.30	0.35	0.24	0.24	0.34	<0.19	0.30	0.22	0.30	0.22	<0.20
Chromium (Cr) (total)	370	112	35.1	30.9	38.0	28.2	24.2	22.6	45.5	44.8	25.1	33.4	45.0	28.3	45.7	38.1
Copper (Cu)	270	68.1	7.2	7.2	15.1	9.1	11.1	9.5	14.2	18.1	10.5	13.6	15.5	13.6	14.2	16.5
Lead (Pb)	218	43.2	3.5	3.0	6.3	3.2	5.8	3.5	6.0	2.3	2.4	3.9	<2.3	6.4	3.6	2.6
Mercury (Hg)	0.7	0.43	0.03	0.03	0.04	0.03	0.03	0.03	0.14	0.03	0.02	0.02	0.02	0.05	0.02	0.03
Nickel (Ni)	120	112	23.7	21.2	29.3	21.1	21.7	22.8	29.1	24.8	19.1	19.4	27.5	41.8	27.4	34.8
Selenium (Se)	none	0.64	<0.40	<0.39	<0.40	<0.38	<0.40	<0.40	<0.39	<0.39	<0.40	<0.40	<0.41	<0.39	<0.40	<0.39
Silver (Ag)	3.7	0.58	<0.29	0.31	<0.29	0.38	<0.31	<0.30	<0.29	0.39	0.29	<0.29	<0.32	<0.32	<0.29	<0.31
Zinc (Zn)	410	158	28.4	26.0	31.0	25.6	22.9	21.0	35.8	27.1	16.6	25.0	53.8	42.3	29.8	24.2
SVOC s (µg/kg wet weight)																
4(3) Methylphenol	none	none	<330	<330	450	<330	<330	<330	<330	<330	<330	<330	<330	290 J	<330	<330
Phenol	none	none	<330	<330	<330	<330	<330	<330	65 J	<330	<330	<330	<330	730	<330	<330

Notes:

All soil metals evaluation criteria are expressed on a dry-weight basis. All organics are reported in a wet-weight basis.

1 Results of metals analyses are reported on a dry-weight basis in this table; data provided in the Site Investigation Report, Volume III (CH2M Hill, 2003).

2 Value listed in Table 4, based on the Effects Range-Median value developed by Long et al. (1995), unless otherwise noted.

3 Value listed in Table 4, based on ambient background concentrations measured in fine-grained San Francisco Bay sediments, unless otherwise noted.

4 Sample PP-1 was collected from Pond 9. Sample PP-2 was collected from Pond 10. Sample PP-3 was collected from Unit 3. Sample CB-1 was collected from crystallizer bed (CB) 3. Sample CB-2 was collected from crystallizer bed 4. Sample CB-3 was collected from crystallizer bed 2. Sample CB-4 was collected from crystallizer bed 1. Sample CB-5 was collected from crystallizer bed 7. Sample CB-6 was collected from crystallizer bed 9. Sample CB-7 was collected from crystallizer bed 6.

J - Estimated value. Detected at a concentration greater than the method detection limit, but less than the practical quantation limit.

<# - Not detected above laboratory reporting limit

References

2000 Draft Guidelines: San Francisco RWQCB published these draft guidelines in May 2000: *Draft Staff Report, Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines* (San Francisco RWQCB 2000).

Table 4.7-6b
Results of Pond Soil Analyses and Background Data

METALS (mg/kg dry weight)[1]	Background Data	WP-1	WP-1 dup	WP-2	WP-3	PP-1 [6]	PP-2 [6]	PP-3 [6]	CB-1 [6]	CB-2 [6]	CB-3 [6]	CB-4 [6]	CB-5 [6]	CB-6 [6]	CB-7 [6]
Antimony (Sb)	none	<1.4	<1.4	<1.4	<1.4	<1.5	<1.4	<1.3	<1.4	<1.3	<1.4	1.9	<1.5	<1.3	<1.4
Barium (Ba)	500 mg/kg[2] ND-490 mg/kg[3]	37.3	37.1	71.4	31.3	23.4	59.3	27.7	23.3	140	22.1	20.1	22.2	22.8	22.0
Beryllium (Be)	0.11-0.97 mg/kg dry wt[4]	0.21	0.18	0.31	0.17	0.24	0.25	0.40	0.24	0.22	0.17	0.26	0.36	0.23	0.32
Cobalt (Co)	6.43-22.6 mg/kg dry wt[4]	3.4	3.4	4.2	3.2	3.7	3.5	4.3	3.7	2.6	2.8	4.3	8.6	4.5	13.4
Molybdenum (Mo)	ND-14 mg/kg[3]	2.4	2.1	2.8	1.9	2.0	1.7	0.83	2.3	0.37	2.4	2.4	1.5	1.5	6.8
Thallium (Tl)	ND-20 mg/kg[3]	0.13	<0.10	0.12	0.11	<0.10	0.10	0.10	0.12	0.19	0.12	0.21	0.12	0.17	<0.10
Vanadium (V)	170 +/- 19 mg/kg[5]	33.9	31.4	36.3	26.7	24.1	24.1	35.8	39.8	24.4	34.5	37.8	31.5	37.8	41.1

Notes:

All soil metals evaluation criteria are expressed on a dry-weight basis.

1 Results of metals analyses are reported on a dry-weight basis in this table; data provided in the Site Investigation Report, Volume III (CH2M Hill, 2003).

2 Background upland concentration for north San Francisco Bay from Shacklette, 1984.

3 Background upland concentrations from LBL, 2002.

4 Data from Sediment Quality Objectives database query, study in process by State Water Resources Control Board and San Francisco Estuary Institute.

5 Concentration in San Pablo Bay from Hornberger, 1999.

6 Sample PP-1 was collected from Pond 9. Sample PP-2 was collected from Pond 10. Sample PP-3 was collected from Unit 3. Sample CB-1 was collected from crystallizer bed (CB) 3. Sample CB-2 was collected from crystallizer bed 4. Sample CB-3 was collected from crystallizer bed 2. Sample CB-4 was collected from crystallizer bed 1. Sample CB-5 was collected from crystallizer bed 7. Sample CB-6 was collected from crystallizer bed 9. Sample CB-7 was collected from crystallizer bed 6.

J - Estimated value. Detected at a concentration greater than the method detection limit, but less than the practical quantation limit.

<# - Not detected above laboratory reporting limit

References

Hornberger, M.I., Luoma, S.N., Van, G.A., Fuller, C., and Anima, R. (1999) *Historical trends of metals in the sediments of San Francisco Bay, California*. Marine Chemistry 64, 39-55.

Lawrence Berkeley National Laboratory (LBL) (2002). *Analysis of Background Distributions of Metals in the Soil at Lawrence Berkeley National Laboratory*.

Shacklette, H.T., and Boerngen, J.G., 1984, Element concentrations in soils and other surficial materials of the conterminous United States: U.S. Geological Survey Professional Paper 1270, 105 p.

soil/sediment assessment criteria in the 2000 Draft Guidelines, with the exception of cadmium, discussed below. Table 4.7-6b presents the soil sampling results for selected metals which are typically thought not to be contaminants of concern in bay sediments and for which the San Francisco RWQCB does not have guidelines, including antimony, barium, beryllium, cobalt, molybdenum, thallium, and vanadium. Since the RWQCB does not have criteria for these metals, regional background concentrations are provided in the table for qualitative comparison.

Cadmium levels in soil samples from 4 of the 13 ponds exhibited concentrations of 0.34 or 0.35 mg/kg dry weight, which exceed the 2000 Draft Guidelines criterion for wetland surface material of 0.33 mg/kg. By comparison, sediment samples collected from the Napa River and Napa Slough in October–November 2001 contained 0.4 and 0.5 mg/kg, respectively, values that also exceed the same criterion (HydroScience Engineers 2002). The results of both sampling efforts suggest that the local soils in the lower Napa River vicinity are characterized by cadmium concentrations slightly above the 2000 Draft Guidelines criterion for surface material, which is based on the estimated cadmium concentration in fine-grained sediments found in the San Francisco Bay area.

Samples collected from three ponds yielded detections of phenolic compounds (4-methylphenol and/or phenol) of less than 1 part per million. Two of the four detections were flagged as being quantified above the method detection limit, but below the practical quantitation limit; these two measurements are interpreted as estimated values. The soil/sediment evaluation criteria do not present criteria for the two semivolatile compounds detected. No other organics were detected in pond soil samples on the proposed NPSR project.

Future Sampling: A sampling program has been designed by DFG to document pre-project total and methyl mercury concentrations in sediment and water at the proposed project site. These samples were collected in May 2006 and are being analyzed by a laboratory. Samples were collected and composited from multiple locations in each pond or group of ponds. These baseline data will be available for comparison with post project concentrations at the Napa Plant Site. In addition, the data will be available for comparison with data collected at other salt pond restoration projects including the NSMRP located across the river and data collected for the South Bay Salt Pond Restoration Project. The San Francisco Estuary Institute web site (http://www.sfei.org/rmp/mercury_newsletter/HgNews10_06_04.htm#section_3) contains descriptions of numerous mercury monitoring programs including a study monitoring mercury concentrations in sediment, biota, and water in five marshes along the Petaluma River in the North Bay and a study to identify wetland design and management options for control of mercury in San Francisco Bay. Section 4.7.2.3 above, describes mercury monitoring in biosentinel fish species in the lower Napa River watershed.

4.7.3.3 Upland Areas

The proposed project site contains approximately 42 acres of upland area. Various structures and equipment associated with salt production operation exist in these upland areas, as well as one residence. Barge channel dredged materials are stockpiled in WP-1 and on upland areas east of the barge channel. Dredged materials were characterized from three samples collected in the fall of 2002 (CH2M Hill 2003) from two boring locations, BCD-01 and BCD-02, shown on Figure 4-4. Sample results were compared with San Francisco Bay RWQCB's Risk-Based Screening

Levels (RBSLs) for surface soil where groundwater is not a current or potential source of drinking water. Concentrations of arsenic and chromium in some samples were above RBSLs. PCBs and TPH-g were below detection limits. Low concentrations of TPH-d and TPH-mo were detected.

The barge channel dredged material proposed for beneficial reuse on the site (existing stockpiles of material dredged from the Napa River referred to in the table above) was sampled during the Phase 2 site investigation performed in fall 2002 (CH2M Hill 2003). Six samples were collected (two locations at three different depths) and analyzed for PAHs, PCBs, TPH-g, TPH-d, TPH-mo, and metals. The tables from the report showing the barge channel dredge material sampling results are included as Appendix A-1 – Response to comments by RWQCB. Figure 1 in Appendix A-1 shows the location of these two borings (BCD-01, BCD-02).

URS compared the metals concentrations in the dredge material to the following assessment criteria: *Draft Staff Report – Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines* (San Francisco Bay RWQCB 2000) (2000 Draft Guidelines) including Biological Effects Range-Low (ER-L) concentrations and Wetland foundation and surface material recommended concentrations. All of the PCB, PAH, and metals concentrations were lower than the 2000 Draft Guidelines for wetland foundation and surface material with the exception of cadmium, which was slightly higher than the 2000 Draft Guidelines for wetland surface material. The wetland surface material criterion for cadmium is 0.33 mg/kg, and the barge channel dredge material sample results ranged from 0.46 to 0.60 mg/kg. The barge channel dredged material is considered suitable for reuse as wetland surface material because: 1) all metals, PCB, and PAH concentrations are lower than the 2000 Draft Guidelines for wetland foundation and surface material, except cadmium; 2) the cadmium concentrations are only slightly higher than the wetland surface material criterion and are significantly lower than the wetland foundation material criterion for cadmium (9.6 mg/kg).

Any imported fill sources will be tested and compared with the concentrations in the Sediment Screening and Testing Guidelines. Results of the testing will be sent to the Regional Board for approval prior to use as fill.

Phase One and Phase Two Environmental Site Assessment work conducted in other portions of the upland areas of the proposed project site are discussed in Section 4.6, Hazardous Materials.

4.7.3.4 Managed Pond Water Quality[10]

There is a managed pond component associated with the proposed project. As mentioned in Section 2 of this report, the managed ponds would contain water year round, which would be maintained at a depth of approximately 2-3 feet to facilitate bird habitat. Data from 2004 in the South Bay suggests that there is a potential for low dissolved oxygen issues associated with restored marsh managed ponds (FWS 2004 and CDFG 2004). However, 2005 data from the USGS (Takekawa 2005) shows that ponds within the NSMRP site did not exhibit particularly low concentration of DO. Most ponds showed DO concentrations above 5 mg/L. Proper design engineering and operational management of flow through type ponds can decrease the potential for low DO issues to occur in managed pond systems. The goal is to reduce flow short-circuiting

[10] As noted above, the managed pond is not part of the selected alternative.

(stagnant areas), allow for wind generated wave action, and to reduce other factors that can lead to algae growth (high nutrients, etc.).

4.7.4 Impacts and Mitigation

4.7.4.1 Impact Significance Criteria

For purposes of this EIR, the following criteria are used to determine if an impact to water quality is significant:

- If an impact has potential to cause or contribute to an excursion beyond a water quality standard included in the Basin Plan.
- If an impact will degrade water quality such that a beneficial use is curtailed, or a susceptible plant/animal is harmed, or habitat is degraded.

For purposes of this EIR, the following criteria are used to determine if an impact to sediment quality is significant:

- If an impact will degrade sediment quality such that a beneficial use is curtailed, or a susceptible plant/animal is harmed, or habitat is degraded.

4.7.4.2 Analytical Methods

The potential for impacts to water and sediment quality that could occur if the salt ponds were restored to tidal marsh, managed ponds, or playa ponds was assessed by comparing the existing condition (salt-making ponds) to the projected conditions under the proposed restoration alternatives, and to the No Project Alternative. Projected conditions likely under the three restoration alternatives were assumed to be similar to conditions that developed at other former salt pond sites already in the process of restoration to tidal marsh and/or managed ponds. The projected long-term characteristics considered in the analysis included salinity, turbidity, dissolved oxygen, temperature, metals, and anthropogenic contaminants in both the pond waters and in the receiving waters of the Napa River and Fagan Slough.

4.7.4.3 Impacts and Mitigation Measures

PROPOSED PROJECT – TIDAL RESTORATION AND MANAGED POND

WA/SED-1: Stormwater contamination and discharge	Implementation of the proposed project could result in discharge of contaminated stormwater during construction.
Significance:	Less than significant
Mitigation:	No mitigation required

Impact Analysis Discussion: Stormwater may carry suspended solids, nutrients, and priority pollutants into the adjacent water bodies (the Napa River or Fagan Slough). Stormwater entering the Napa River or Fagan Slough could increase the level of biochemical oxygen demand in the receiving water. The Basin Plan establishes allowable levels of these constituents in the Napa

River and Fagan Slough. Causing or contributing to an excursion beyond the allowable levels is considered significant. Construction will be completed during the dry season, minimizing the potential for a discharge from the site with one possible exception. If coffer dams are used to sequester the breach areas then there may be seepage that needs to be treated or disposed of as stipulated in the Stormwater Pollution Prevention Plan (SWPPP). As part of the proposed project, a SWPPP and a Stormwater Monitoring Program will be developed and implemented. The Clean Water Act, National Pollutant Elimination System (33 United States Code 1342) requires that construction projects disturbing more than 1 acre of land must develop and implement a SWPPP. Implementation of the Best Management Practices in the SWPPP will reduce the impacts of stormwater leaving the site to less than significant.

WA/SED-2: Impacts to receiving water salinity	Implementation of the proposed project could result in an increase in salinity in the Napa River or in Fagan Slough.
Significance:	Potentially significant
Mitigation WA/SED-2:	Impacts to the Napa River will be minimized by constructing the proposed project while the ponds are dry and by controlling the timing, rate, and concentration of discharges from the managed pond. The proposed project would avoid discharging water from the managed pond to the Napa River in an abrupt manner, during low flow in the Napa River, and when managed pond salinity is greater than 100 ppt. Discharge from the managed pond will be minimized during salmonid migration in the river from December 1 through April 30.
Residual Significance:	Less than significant

Impact Analysis Discussion: The Basin Plan establishes narrative water quality objectives for salinity in the Napa River and Fagan Slough. The water quality objective is to avoid increasing salinity to the point where an adverse effect on beneficial uses, particularly fish migration and estuarine habitat, is created. Causing or contributing to an adverse effect due to high salinity is considered significant. The proposed project will comply with Waste Discharge Requirements and or a National Pollution Discharge Elimination System (NPDES) permit for the managed pond discharge issued by the Regional Water Quality Control Board.

There are two potential impact cases to consider: directly after breach construction (time zero) and during normal operation of the tidal restoration.

Time Zero: The tidal ponds would be dry when the levees are breached and tidal exchange is initiated.

During Normal Operation: No salinity impacts on the Napa River or Fagan Slough are expected from fully tidal ponds.

During normal operations water from the Napa River will enter the ponds where it will be exposed to the saline soils on the pond bottoms. Salt from these soils can diffuse into the tidal waters and thereby increase the salinity of the water that leaves the ponds on a falling tide. Soil and water samples were collected from Ponds 9 and 10 to estimate the potential to increase the

salinity of water discharging from the salt ponds after they are breached. A discussion of the field program and analysis is provided in Appendix A.

The analysis indicated that the increase in salinity of the water in the ponds during a tide cycle should be less than about 1 ppt. For comparison, the salinity in the rainwater that collected in the ponds this winter was about 15-16 ppt about 2 months after the first rains.

During normal operation, the managed ponds would draw in river water to meet depth objectives, and would periodically discharge to the river for flushing or water level management. Salinity within the managed ponds may increase above the influent river concentration due to (1) precipitated salt on the pond bottom redissolving into the water column; and (2) evaporation during non-flushing periods causing a rise in salt concentration. It is not known how much precipitated salt will remain when DFG assumes management of the site. Solution kinetics will be the primary factor determining the rate at which precipitated salts would redissolve. Wind/wave action will increase the dissolution rate. Certain precipitated compounds redissolve slowly or not at all, which would attenuate the potential for salinity of incoming water to increase while in the ponds. In addition, those precipitated salts which are relatively insoluble may form a crust in places, which would also tend to decrease the dissolution rate.

Potential for raising the salinity of the Napa River at the discharge point of the managed ponds could be minimized by limiting the magnitude of discharges and lengthening the duration of release. Discharge from the managed pond will be minimized during salmonid migration in the river from December 1 through April 30.

WA/SED-3: Impact to general water quality parameters	Implementation of the proposed project could result in adverse effects on other general water quality parameters in the Napa River or Fagan Slough.
Significance:	Potentially significant
Mitigation WA/SED-3:	Compliance with a Waste Discharge Requirements or an NPDES permit that may be issued for managed pond operation
Residual Significance:	Less than significant

Impact Analysis Discussion: General water quality parameters that could be impacted include total suspended solids, dissolved oxygen, nutrients (nitrogen and phosphorous), biochemical oxygen demand, temperature, and pH. The Basin Plan establishes allowable levels of these parameters in the Napa River and Fagan Slough. Causing or contributing to an excursion beyond the allowable levels is considered significant.

Tidal Area: No significant impact is expected and no mitigation is expected to be required for the tidal areas. Waste Discharge Requirements can be waived for tidal marsh restoration projects.

Managed Pond: Early experience at the South Bay Salt Pond restoration site suggests that circulation patterns in managed ponds with less than full tidal exchange may leave dead zones where water quality parameters can trend outside regulatory water quality goals, especially for dissolved oxygen. DFG will comply with Waste Discharge Requirements or an NPDES permit that may be issued for managed pond operation.

WA/SED-4: Impact to priority pollutant loads	Implementation of the proposed project could result in an increase in priority pollutants in the waters of Napa River or Fagan Slough.
Significance:	Less than significant
Mitigation:	No mitigation required

Impact Analysis Discussion: Priority pollutants include metals, VOCs, SVOCs, PAHs, PCBs, and pesticides, dioxins, and furans. The Basin Plan establishes allowable levels of these constituents in the Napa River and Fagan Slough. Causing or contributing to an excursion beyond the allowable levels is considered significant.

Site history and use indicate that the priority pollutants listed are not expected to occur on the proposed project site at significantly elevated concentrations as compared with background levels in areas that would be below MHHW.

WA/SED-5: Impact to mercury concentrations	Implementation of the proposed project could result in increases in the amount of mercury in the water in the Napa Plant site ponds.
Significance:	Potentially significant
Mitigation WA/SED-5:	Monitor mercury concentrations in water prior to construction. Monitor fish tissue after construction to correspond with the RWQCB's new water quality objective.
Residual Significance:	Less than significant

Impact Analysis Discussion: There would be two potential sources of mercury in the tidal and managed pond areas after implementation of the proposed project. Incoming tidal water from the Napa River would have a baseline mercury concentration. In addition, exposure of formerly upland sediments containing mercury to the anoxic conditions associated with the constant wetting and drying of tidal action, could potentially result in release of mercury from those sediments into the water column as methyl mercury. Vegetation cycling will also contribute to changes in methyl mercury (once vegetation is established). Biosentinel species of fish (such as inland silversides) will be monitored to be consistent with the RWQCB's new fish tissue based water quality objective.

WA/SED-6: Impact to methyl mercury dynamics	Implementation of the proposed project could result in accumulation of methyl mercury in the sediment of the pond bottoms.
Significance:	Potentially significant
Mitigation WA/SED-6:	Monitor sediment mercury concentrations prior construction. Monitor fish tissue after construction to correspond with the RWQCB's new water quality objective.
Residual Significance:	Less than significant

Impact Analysis Discussion: Accumulation of methyl mercury in the sediment of the pond bottoms could lead to adverse impacts on resident wildlife and, if the sediments are flushed from the ponds, on wildlife in adjacent waters. Sediment sampling data collected for the NSMRP in 2001 indicated that total mercury concentrations were lower in the sediments of the salt concentrator ponds than in the sediments of the Napa River and nearby sloughs. Total mercury concentrations in pond sediments at the proposed project site, based on sampling in September and October 2002, are significantly lower than mercury concentrations in sediments of the Napa River, nearby sloughs, and San Pablo Bay.

Repeated cycles of wetting and drying of sediment, which are expected after tidal exchange is restored, are known to favor the production of methyl mercury. In the methylated form, mercury is highly toxic and strongly bioaccumulative. Even when methyl mercury concentrations in seawater are not high, the compound concentrates as it ascends the food chain, and may reach concentrations in fish which are high enough to cause methyl mercury poisoning. In the inorganic or divalent cation form, mercury is significantly less toxic.

In sediments where the redox potential is very low (significantly below -200 mV) mercury is bound up by H_2S and is unavailable to the sulfate reducing bacteria primarily responsible for the production of methyl mercury in estuarine environments. In sediments where redox potential is high, the action of methylating organisms ceases and demethylation occurs. But between the two extremes of sediment redox potential, at moderately low redox potentials of around -200 mV, sulfate-reducing bacteria will produce significant amounts of methyl mercury.

Sediment samples were collected in October 2001 at the NSMRP site. The analytical results indicated that total mercury concentrations in the sediments of the Napa River and Napa Slough, adjacent to the NSMRP site, were 370 and 340 µg/kg dry weight, respectively. The mercury levels in the concentrator ponds were lower than in the Napa River or Napa Slough, and are shown in Table 4.7-7. The pattern of occurrence of total mercury in the sediments of the NSMRP site, displayed in Table 4.7-7, appears to be one of decreasing mercury concentrations in the sediment as the pond number increases. San Pablo Bay water was routed through the ponds in order of increasing pond number. It appears that mercury concentrations are highest in the sediment of the surrounding water bodies, and progressively lower in ponds further removed from the surrounding water bodies.

Sediment samples were collected in the ponds at the proposed project site in September and October 2002. The concentration of total mercury in pond sediments ranged from 0.02 to 0.14 mg/kg dry weight as shown in Table 4.7-6a). Total and methyl mercury concentrations in sediment are measured annually at four locations in San Pablo Bay by SFEI as part of the RMP. The range of total mercury concentrations measured at the four locations in 2003 was 218.5 to 324 µg/kg (http://www.sfei.org/rmp). The mercury concentration in the ponds at the proposed project site is significantly lower than the mercury concentration measured in the Napa River, Napa Slough, and San Pablo Bay. It is not known whether total mercury in the sediments of the proposed project site ponds will increase after tidal exchange is reestablished.

Mercury methylation is a potentially significant impact. However, the potential for mercury methylation within the Napa Plant Site ponds will be dependent on sediment redox reactions, mercury concentration in incoming sediments that will be deposited in the ponds and other factors. The redox potential of the sediments in the Napa Plant Site ponds is not known, and will change after tidal action is introduced. If mercury levels in the sediments in the proposed project site were to rise, then the potential for the formation of methyl mercury may increase. However, the proposed project site pond sediments are presently lower in total mercury than the Napa River, Napa Slough, and San Pablo Bay. Biosentinel species of fish (such as inland silversides) will be monitored to be consistent with the RWQCB's new fish tissue based water quality objective.

Table 4.7-7
Total Mercury Concentrations in Sediments of Nearby Salt Concentrator Ponds, Proposed Project Site Ponds, and Receiving Waters [µg/kg dry weight]

Site	Mercury Concentration (µg/kg)	Site	Mercury Concentration (µg/kg)
Receiving Waters		**Proposed Project Site (Sept-Oct 2002)[2]**	
Napa River	370	WP-1	30
Napa Slough	340	WP-1 dup	30
San Pablo Bay[1]	218.5 - 324	WP-2	40
San Pablo Bay (MeHg)[1]	0.0685 – 1.1796	WP-3	30
NSMRP Site (October 2001)		PP-1[3]	30
Pond 1	340	PP-2[3]	30
Pond 1A	180	PP-3[3]	140
Pond 2	120	CB-1[3]	30
Pond 2A	290	CB-2[3]	20
Pond 3	260	CB-3[3]	20
Pond 4	60	CB-4[3]	20
Pond 5	110	CB-5[3]	50
Pond 6	60	CB-6[3]	20
Pond 6A	170	CB-7[3]	30
Pond 7	30	**Guidelines**	
Pond 7A	70	2000 Draft Criterion for reuse	430
Pond 8	70	Alviso Ponds in the South Bay	500±

Notes:
[1] Range of concentrations from four samples collected in San Pablo Bay in 2003 as part of RMP
[2] Data provided in Site Investigation Report, Volume III (CH2MHill, 2003)
[3] Sample PP-1 was collected from Pond 9. Sample PP-2 was collected from Pond 10. Sample PP-3 was collected from Unit 3. Sample CB-1 was collected from crystallizer bed (CB) 3. Sample CB-2 was collected from crystallizer bed 4. Sample CB-3 was collected from crystallizer bed 2. Sample CB-4 was collected from crystallizer bed 1. Sample CB-5 was collected from crystallizer bed 7. Sample CB-6 was collected from crystallizer bed 9. Sample CB-7 was collected from crystallizer bed 6.

ALTERNATIVE 1 – FULL TIDAL RESTORATION

Impacts and mitigation for Alternative 1 are equivalent to the proposed project for impacts WA/SED-1, WA/SED-4, WA/SED- 5, and WA/SED- 6. The impacts for WA/SED-2 and WA/SED-3 would be "less than significant" because there would be no managed pond under Alternative 1. Therefore, the potential for high salinity discharge and negative impacts on general water quality parameters is less for Alternative 1. No mitigation is required for WA/SED-2 or WA/SED-3.

ALTERNATIVE 2 – TIDAL RESTORATION, MANAGED POND AND PLAYA

Impacts under Alternative 2 are essentially equivalent to the proposed project because construction and operation activities would be nearly identical. The primary difference is that playa habitat would be established within the wash ponds. In the playa ponds, as the water evaporates in the late summer, salinity and temperature may increase, and dissolved oxygen may decrease. These

parameters could trend outside Basin Plan standards. Since discharge to the Napa River from the playa ponds is not anticipated, little potential would exist for negative impacts to the Napa River. The playa ponds would constitute a small portion of the proposed project, and could provide for additional diversity in the wildlife supported in the lower Napa River region.

ALTERNATIVE 3 – NO PROJECT

The No Project Alternative has the potential to create water quality conditions that cause excursions beyond Basin Plan water quality goals for several general water quality parameters. Under the No Project Alterative the ponds and crystallizer beds in the proposed project area would collect rainwater during the wet season, and dry out during the dry season. The water quality in the ponds would vary seasonally from slightly brackish conditions in the late winter (when the ponds would be full) to highly saline, low dissolved oxygen, high temperature, and possibly high pH in the late summer.

Water quality in the adjacent waters of the Napa River and Fagan Slough would not be affected unless an uncontrolled levee breach occurred. The probability of an uncontrolled levee breach would be highest during a high river flow event in the wet season, and this probability would increase as time progresses unless significant resources were devoted to levee maintenance. An uncontrolled levee breach could lead to excursions beyond Basin Plan water quality goals for several general water quality parameters. Causing or contributing to an excursion beyond the allowable levels in the Basin Plan is considered significant. Water in the ponds at the proposed project site would trend outside Basin Plan water quality objectives on a seasonal basis, with the poorest water quality occurring in summer. The ponds are likely to be dry between summer and the start of the rainy season.

ATTACHMENT A

Chapter IV
Mitigation Monitoring Plan

Section 4 of this Final EIR presents the Mitigation Monitoring Plan for the proposed project.

Mitigation Measure	Purpose	Implementation Timing	Monitoring Requirements	Responsible Party
Air Quality				
Mitigation Measure AQ-1: Apply the following measures to reduce fugitive dust and equipment exhaust emissions: 1. Water all active construction areas at least twice daily, if needed; 2. Cover all trucks hauling soil, sand, and other loose materials or require all such trucks to maintain at least 2 feet of freeboard; 3. Pave, apply water 3 times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites, if needed; 4. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites, if needed; 5. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets; 6. Enclose, cover, water twice daily or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.), if needed; 7. Limit traffic speeds on unpaved roads to 15 mph; 8. Install sandbags or other erosion-control measures to prevent silt runoff to public roadways; 9. Minimize the time equipment is idling; 10. Maintain properly tuned equipment.	Minimize fugitive dust from ground disturbance and exhaust pollutants from construction equipment.	During construction	Monitoring as needed during construction	DFG
Biology				
Mitigation Measure BIO-1a: Pre-construction surveys for special-status plant species will be conducted in areas that will be disturbed by construction activities. The pre-construction surveys will be conducted during suitable identification season(s) and within 1 year of the construction activities. If special-status plant species are observed they will be avoided if at all possible.	To minimize the potential permanent loss of habitat or direct "take" of special-status plant species.	Prior to construction	Pre-construction surveys for presence of species	DFG

Mitigation Measure	Purpose	Implementation Timing	Monitoring Requirements	Responsible Party
Mitigation Measure BIO-1b: Implement the following measures to reduce the risk of take (organisms and/or habitat damage) for special status species: 1. If construction must occur during nesting season (February-July), conduct pre-construction surveys for California clapper rail, black rail, salt marsh common yellowthroat, San Pablo song sparrow, western snowy plover, and western burrowing owl in appropriate on-site habitat that may be affected by construction (including buffer zones, e.g. southern portion of Fagan Marsh); 2. Avoiding work in occupied habitat during breeding/nesting periods, i.e. February-July; 3. Conducting construction worker "tail-gate" training, and; 4. Providing onsite biological monitoring during construction activities in potentially occupied special status species habitat, such as salt marsh harvest mouse habitat.	To minimize the potential temporary habitat loss or loss of special-status terrestrial wildlife species.	Within 72 hours of construction, if construction is during nesting season.	A Service approved biologist will conduct pre-construction nesting surveys and will monitor during construction. If nests are located an adequate distance from construction limits (150-300 feet depending on terrain and activity) then construction may proceed. If nest sites are located in areas that would be disturbed by construction then DFG will consult with U.S. Fish and Wildlife Service to determine additional mitigation measures to avoid or reduce mortality, e.g. buffer set-backs or changing the work item sequence.	DFG
Mitigation Measure BIO-1c: An incidental take authorization may be required from USFWS and NOAA-Fisheries for impacts to special status species for construction within the waters of the U.S. Mitigation measures to minimize the potential for entrapment and adverse water quality resulting from constructing levee breaches will be developed in consultation with USFWS and NOAA-Fisheries (as needed, if breaching is under tidal conditions with inundated ponds).	To minimize potential of direct "take" of special-status aquatic species.	During construction	Monitoring as needed during construction, as defined in Biological Opinion from Section 7 Consultation	DFG
Mitigation Measure BIO-4: See Mitigation Measure BIO-1c above.	To minimize interference with anadromous fish passage by causing entrapment or increased predation.	During construction	Monitoring as needed during construction	DFG
Hazardous Materials				
Mitigation Measure HAZ-4: The contractor will achieve compliance with the nuisance dust standard by implementing Mitigation Measure AQ-1. As described in Section 4.1, Air Quality, the contractor will be required to comply with most of BAAQMD's BMPs for dust control.	To minimize the release of irritant dust from construction activities.	During construction	Monitoring as needed during construction	DFG

Mitigation Measure	Purpose	Implementation Timing	Monitoring Requirements	Responsible Party
Hydrology and Water Resources				
Mitigation Measure WR/HYD--2: Close visitor center when Napa River is predicted to be at flood stage. Post escape routes to high ground on Green Island in Visitor Center. Repair unintended levee breaches.	To minimize the risk to people or structures of loss, injury, or death involving flooding. Prevent channel erosion and potential damage to adjacent levee systems	As needed during construction and operation	Monitor Napa River flood stage as needed during construction and operation. Monitor levee integrity as part of on-going maintenance activities. Maintain signage (inspect annually before start of rainy season)	DFG
Water and Sediment Quality				
Mitigation Measure WA-SED-5: Monitor mercury in water prior to construction. Monitor fish tissue after construction to correspond with the Board's new water quality objective.	To evaluate the concentration of methyl mercury in fish in the restoration project site by comparing concentrations with other North Bay sites.	Prior to, during, and after construction	Monitor water prior to construction. After construction conduct biosentinel mercury monitoring in years 2, 4, 6 and 8 using resident species (e.g. silversides, gobies or topsmelt). Use protocols established by CBDA Biosentinel Mercury Monitoring Program study.	DFG
Mitigation Measure WA-SED-6: Monitor sediment mercury concentrations prior to construction. Monitor fish tissue after construction to correspond with the Board's new water quality objective.	To evaluate the concentration of methyl mercury in fish in the restoration project site by comparing concentrations with other North Bay sites.	Prior to, during, and after construction	Monitor sediment prior to construction. After construction conduct biosentinel mercury monitoring in years 2, 4, 6 and 8 using resident species (e.g. silversides, gobies or topsmelt). Use protocols established by CBDA Biosentinel Mercury Monitoring Program study.	DFG
Land Use, Planning, and Community Issues				
Mitigation Measure LU-2: See Mitigation Measures PHS-1a and 1b below.	To minimize the negative impacts due to conflict with the airport land use plan.	Prior to and during construction	Monitoring as needed prior to and during construction	DFG
Public Services and Utilities				
Mitigation Measure PSU-2: The proposed project sponsors will coordinate with NCMAD during the design, implementation, and operations phases of the proposed project. DFG will consult with NCMAD during the project design phase to incorporate design elements to reduce the mosquito production potential of the proposed project.	To minimize potential need for the County's Mosquito Abatement services.	Prior to, during, and after construction	Monitoring as needed prior to, during, and after construction	DFG

Mitigation Measure	Purpose	Implementation Timing	Monitoring Requirements	Responsible Party
Public Health and Safety				
Mitigation Measure PHS-1a: Excavate tidal channels into the site to enhance draining, reduce areas of standing water, and thereby reduce waterfowl habitat and use of the site. Mitigation Measure PHS-1b: Increase the surface elevation of the ponds underneath the basic flight pattern of Runways 6/24 and to hasten vegetation establishment, reducing the use of the site by flocking shorebirds and waterfowl. Mitigation Measure PHS-1c: Implement adaptive management measures if the project results in an increase in the number of bird strikes attributable to project implementation. Adaptive management measures would include avian control techniques (such as habitat exclusion, repellent techniques, and harassment) identified in the FAA *Wildlife Hazard Management at Airports* publication.	PHS-1a, 1b, and 1c To minimize the safety hazard for operations of aircraft as the proposed project would be located in an airport land use planning area.	PHS-1a and PHS 1b during construction (channel excavation and fill placement) PHS-1c Adaptive Management, post construction	**Bird surveys**. Survey methods will include point counts for species and abundance, as well as general observations of behavior such as foraging and roosting. Nesting activity will be documented. Bird surveys will be conducted quarterly in Ponds 9 & 10, and semi-annually (two times per year) in all other restored salt ponds, until vegetation reaches 90% cover and the predominant bird use shifts from shorebirds and waterfowl to resident marsh species. Surveys will continue for approximately 1 year thereafter. Surveys will be conducted for a maximum of 10 years. Data from United States Geological Survey (USGS) bird surveys conducted at the project site between 2003 and 2006 will be used as a baseline for comparison of bird data collected in the post-project monitoring period. Data analysis will include an analysis of species composition, bird abundance and trends in use. **Vegetation.** Annual aerial photography supported by ground-truthing and GIS to estimate vegetation cover in the wetland areas from the photo. Ground-truthing to make qualitative assessments of species richness and composition. Vegetation monitoring will commence when vegetation cover in a planning unit is approximately 20 percent and cease at 10 years post construction or at 90% cover, whichever is sooner. **Adaptive Management:** A Technical Advisory Committee (TAC) will be formed to discuss adaptive management measures, particularly in regard to bird strike hazards. The TAC will include DFG staff, resource agency staff and representatives from Napa County (Airport and Public Works Department). The TAC will review bird strike data and determine if adaptive management measures are needed.	DFG for PHS-1a and 1b and DFG plus Technical Advisory Committee for PHS-1c

Mitigation Measure	Purpose	Implementation Timing	Monitoring Requirements	Responsible Party
Mitigation Measure PHS-2: See Mitigation Measures PHS-1 and PSU-2 above.	The proposed project has the potential to increase habitat for disease vectors.	Prior to, during, and after construction	Monitoring as needed prior to, during, and after construction	DFG
Public Access, Recreation, and Visual				
Mitigation Measure PARV-1: See Mitigation Measures BIO-1a through BIO-4 above.	To minimize adverse physical effect on the environment due to construction of recreation facilities.	Prior to and during construction	Pre-construction surveys for presence of special-status species and habitat and monitoring during construction	DFG

Chapter V
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